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The rhythm of science in the heart of the country: fourteen years of the Brazilian Breast Cancer Symposium

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From May 15 to 17, 2025, the city of Brasília, Brazil's federal capital, hosted the 14th edition of the Brazilian Breast Cancer Symposium (BBCS)¹, the main event in Latin America dedicated to research and multidisciplinary debate on breast cancer. The edition was attended by approximately 800 professionals, including doctors, researchers, scientists, students, and other members of the health sector, reaffirming its relevance in the dissemination of scientific knowledge produced in the country (<https://2025.bbcs.org.br/>).

Brasília, known for its modernist architecture and its planning focused on integration and dialogue between the different political spheres and regions of Brazil^{2,3}, was the perfect venue for an event whose essence lies in the exchange of knowledge. Over the course of the three days, highly relevant topics were

discussed in depth, ranging from advances in diagnostic and therapeutic methods to public health strategies and comprehensive patient care.

From a scientific perspective, the contribution of research groups from different regions of the country demonstrated that, despite the structural challenges that still exist, Brazilian science remains dynamic and innovative. The evaluation of the submitted papers was carried out by an independent committee composed of more than 20 professors with doctoral degrees, using objective and previously published criteria^{4,5}. This procedure is reflected in the high quality of the abstracts presented and in the significant publication rate of the papers^{6,7}. In addition, the BBCS publicly recognizes the best papers in several evaluation categories, as illustrated in Table 1.

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Table 1. Awards of the Brazilian Breast Cancer Symposium and scientific papers recognized in 2025, by category.

Award Category	Prizes	Award-Winning Scientific Paper in 2025
The best paper in oral presentation	Ticket, registration and hosting for the San Antonio Breast Cancer Symposium	Breast surgery for metastatic breast cancer: an update of Cochrane systematic review
The best paper in tracking	R\$ 2.000,00	The role of liquid biopsy in breast cancer screening and monitoring: a systematic review of literature
The best paper in basic and translational research	R\$ 2.000,00	Innovative platform for chemoresistance: advancing functional precision medicine in breast cancer
The best paper in systemic treatment	R\$ 5.000,00	Updated meta-analysis of randomized trials: pathological complete response (pCR) as a prognostic marker for survival in breast cancer treated with neoadjuvant chemotherapy
The best paper in imaging	Registration for the <i>Jornada Paulista de Mastologia 2025</i>	Accuracy of multidetector computed tomography (MDCT) with a dedicated protocol in the locoregional staging of breast cancer
The best paper in epidemiology	Ticket, registration and hosting for the <i>Jornada Paulista de Mastologia 2025</i>	Breast cancer screening indicators in users of the Brazilian Unified Health System (SUS) after the implementation of the Itaberaí Project
The best paper in locoregional treatment	R\$ 5.000,00	Omission of axillary surgery in early breast cancer with negative lymph nodes: a systematic review and metanalysis of randomized clinical trials
Unicentro Brazilian award	R\$ 5.000,00	CDK4/6 inhibitor plus endocrine therapy after progression on CDK4/6 inhibition in HR+/HER2- advanced breast cancer: a systematic review and meta-analysis (ReIGNITE study)

The event also served as an occasion for reaffirming and renewing institutional and professional objectives, particularly within a global context characterized by political tensions, economic instability, and persistent disparities in access to advanced technologies and therapeutic options. The ethical and scientific commitments of healthcare professionals engaged in the fight against breast cancer assume an even greater significance under these circumstances. The challenges extend beyond the clinical and laboratory domains, exerting influence on public policy development, multidisciplinary care frameworks, and, above all, on the dignity and quality of life of affected patients. In this regard, the 8th edition of the Patient, Survivorship, and Advocacy Forum distinguished itself by amplifying the voices of women living with breast cancer, thereby promoting their central role in shaping discussions and policies related to the disease.

In this edition of *Mastology*, we include a complete compilation of all abstracts that were approved and presented at the 2025 Brazilian Breast Cancer Symposium. This collection provides a comprehensive overview of the current scientific contributions, highlighting the latest research developments and multidisciplinary efforts within the field of breast cancer.

As we conclude this edition of the BBCS, we carry with us not only data, graphs, and technological advancements but also a symbolic reminder that we are in the heart of the country—the center of life, rhythm, and hope. May Brasília continue to symbolize the importance of a science rooted in social responsibility and the diversity of knowledge.

Let us move forward with determination, guided by science and supported by empathy, toward a future of greater prevention, equitable access to interventions, and, above all, the hope for a cure.

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Treatment patterns and safety of adjuvant therapy after chemoimmunotherapy for early-stage triple-negative breast cancer in a real-world scenario: the Neo-Real/GBECAM-0123 study

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Introduction: The KEYNOTE-522 trial established neoadjuvant pembrolizumab plus chemotherapy (P+CT) followed by adjuvant pembrolizumab as the standard of care for stage II–III triple-negative breast cancer. However, integrating this regimen with other adjuvant therapies, such as capecitabine or olaparib, remains uncertain in clinical practice. **Objective:** This study aimed to evaluate real-world treatment patterns and safety outcomes of adjuvant therapies following neoadjuvant P+CT. **Methods:** This multicentric Neo-Real/GBECAM-0123 study included triple-negative breast cancer patients treated with neoadjuvant P+CT since July 2010 across ten cancer centers. The analysis focused on treatment patterns and safety, particularly grade ≥ 3 adverse events (AEs). **Results:** Out of the 410 patients enrolled, 359 underwent surgery and 185 completed adjuvant therapy. The median age was 43 years; 69.5% had stage II and 25.8% had stage III disease. A pathologic complete response was achieved in 62.5% (n=218); among them, 85.9% continued adjuvant pembrolizumab. In breast cancer wild-type unknown patients with residual disease (n=114), 54.4% received pembrolizumab plus capecitabine (P+C), 26.3% pembrolizumab alone, and 10.5% capecitabine alone. Among breast cancer-mutated patients with residual disease (n=12), 75% received pembrolizumab plus olaparib (P+O), 16.7% P+C, and 8.3% olaparib alone. Grade ≥ 3 AEs rates were higher with P+C (16.3%) and P+O (14.3%) compared to pembrolizumab alone (6.3%; p=0.057). Anemia grade ≥ 3 occurred in 14.3% of P+O patients vs. 0% pembrolizumab alone, while diarrhea (6.1%) and hand-foot syndrome (8.2%) were more frequent with P+C. No increase in immune-related grade ≥ 3 AEs was observed with combinations. **Conclusion:** In a real-world scenario, most patients with triple-negative breast cancer continued adjuvant pembrolizumab after a pathologic complete response, while adjuvant capecitabine and adjuvant olaparib were frequently used in combination with pembrolizumab for those with residual disease. Combined adjuvant strategies showed higher rates of grade ≥ 3 AEs and drug discontinuations. The efficacy of the combined adjuvant strategies remains to be determined.

Keywords: breast neoplasms; adjuvant chemotherapy; immunotherapy; poly (ADP-ribose) polymerase inhibitors; capecitabine.

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Just one weekly session of strength or combined training preserves cellular integrity, cardiorespiratory fitness, and increases neuromuscular strength in women with breast cancer during chemotherapy: a randomized controlled trial

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Objective: To compare the effects of strength training or combined training on cellular integrity, cardiorespiratory fitness, and neuromuscular strength in women with breast cancer undergoing chemotherapy. **Methods:** A randomized controlled clinical trial was conducted (CEP:50717115.4.0000.5083; REBEC:16497). Nineteen volunteers (age 45.1, standard deviation ± 2.9 years) were randomized into the following groups: strength training (ST), combined training (CT), or control group (CG). Volunteers in the ST and CT groups (strength and aerobic) underwent 12 weeks of training with one session per week during neoadjuvant chemotherapy with anthracyclines. Cellular integrity, cardiorespiratory fitness, and neuromuscular strength were assessed before the first (baseline) and after the fourth chemotherapy cycle (post-treatment). Cellular integrity was evaluated based on tetrapolar bioimpedance test. Cardiorespiratory fitness was assessed using a treadmill stress test, while neuromuscular strength was measured with an isometric knee extension test. Data are presented as mean and standard deviation. A two-way analysis of variance (ANOVA) test (3x2) was used with Sidak's post hoc test. The significance level was set at $p < 0.05$. **Results:** The ST, CT, and CG groups did not differ at baseline in cellular integrity (6.1 ± 0.2 ; 6.2 ± 0.2 ; and 5.3 ± 0.4 , respectively), cardiorespiratory fitness (22.5 ± 0.3 ; 22.4 ± 0.9 ; and 23.2 ± 1.2 , respectively), and neuromuscular strength (141.0 ± 20.0 ; 243.0 ± 49.0 ; and 101.6 ± 12.1 , respectively). However, the CG group showed a reduction in cellular integrity at post-treatment (5.0 ± 0.4 ; $p = 0.01$), while the CT and ST groups had no significant changes (6.4 ± 0.3 and 6.2 ± 0.1 , respectively). Cardiorespiratory fitness decreased in the CG group post-treatment (19.9 ± 0.8 ; $p = 0.04$) and was lower than the CT group (25.5 ± 1.4 ; $p = 0.04$). The ST group showed no difference in post-treatment fitness. Neuromuscular strength increased in the ST (258.8 ± 48.2 ; $p = 0.03$) and CT (446.8 ± 59.1 ; $p = 0.00$) groups, with a significant difference compared to CG post-treatment (90.0 ± 7.7 ; $p = 0.01$). **Conclusion:** Just one session per week of ST or CT for three months preserved cellular integrity, cardiorespiratory fitness, and increased neuromuscular strength in women with breast cancer undergoing chemotherapy with anthracyclines.

Keywords: resistance training; neoplasia; endurance training.

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Low-intensity exercises during chemotherapy infusion for fatigue, functionality, and neuropathy in women with breast cancer

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Objective: To evaluate the practice of low-to-moderate intensity exercise during chemotherapy infusion. **Methods:** This is a randomized clinical trial with 35 participants, including breast cancer patients aged 18 to 85 years, approved by the ethics committee of the Hospital de Amor, under number 82161424.6.0000.5437. Randomization was performed using sampling on the REDCap platform and consisted of two groups: G1 (intervention) and G2 (control). During the first chemotherapy cycle, questionnaires were administered to assess functionality (IPAQ), fatigue (FAS), chemotherapy-induced neurotoxicity (QNIA), and perceived exertion (Borg scale). For exercise prescription, the maximum heart rate of each patient was calculated. Group G1 was subjected to exercises predefined by the researcher, while group G2 followed the conventional guidelines of the department. After five sessions, participants responded to the study questionnaires and provided feedback created by the researcher. **Results:** In the final evaluation (after intervention), 28.6% of patients did not experience fatigue, 14.3% had mild fatigue, with severe fatigue being predominant. Regarding functionality, 57.1% became more active after the research period, meeting at least one of the recommendations for frequency and/or duration of physical activity. Considering the degree of neuropathy in the lower limbs, grade 4 (persistent and disabling symptoms) was highlighted in 71.4% of women. In the upper limbs, 50.0% of patients had no symptoms or paresthesia, while the other 50.0% presented grade 4. For orofacial symptoms, grade 3 (pain or functional impairment interfering with activities of daily living) and grade 4 predominated, both at 28.6%. According to the feedback provided by the researcher, physical exercise practice during infusion was beneficial for the patients. Larger-scale studies are needed to confirm their efficacy. The study is still in its inclusion phase. **Conclusion:** Physical exercise during infusion was feasible, safe, and beneficial for the participants.

Keywords: exercise therapy; antineoplastic agents; breast neoplasms.

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Dense-breast study: dose-dense neoadjuvant chemotherapy in breast cancer: a network meta-analysis of efficacy and toxicity

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Objective: To evaluate the efficacy and toxicity of dose-dense versus standard anthracycline- and taxane-based neoadjuvant chemotherapy regimens in breast cancer through a systematic review and network meta-analysis. **Methods:** This Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)-compliant included seven randomized trials and high-quality observational studies comprising 2,670 patients with non-metastatic breast cancer. The primary endpoint was pathological complete response (pCR), and secondary endpoints included overall survival, disease-free survival, and grade 3–4 toxicities. Subgroup analyses were conducted across molecular subtypes and treatment characteristics. Treatment ranking was performed using surface under the cumulative ranking curve (SUCRA) analysis. **Results:** Dose-dense regimens significantly improved pCR rates compared to standard regimens (effect size: 0.87; 95% confidence interval 0.81–0.93), with an absolute pCR rate of 43.9%. Survival analyses showed a 15%–25% relative reduction in recurrence and mortality with dose-dense therapy. The most pronounced benefits were observed in human epidermal growth factor receptor-type 2 (HER2)-positive and triple-negative breast cancer subgroups, especially in high-risk, early-stage disease. However, dose-dense regimens were associated with increased toxicity, including grade 3–4 neutropenia (10%–24%) and anemia (up to 30%). SUCRA analysis ranked trastuzumab-based, platinum-containing, and combination regimens highest in efficacy, while standard anthracycline- and capecitabine-based regimens ranked lower. Subgroup and sensitivity analyses confirmed the robustness of these findings and emphasized the heterogeneity of benefits across tumor types and clinical risk factors. **Conclusion:** Dose-dense neoadjuvant chemotherapy regimens improved pCR, disease-free survival, and overall survival, particularly in HER2-positive and triple-negative breast cancer patients. However, their increased toxicity profile necessitates judicious patient selection and comprehensive supportive care. Future directions include integrating biomarkers, immune checkpoint inhibitors, and novel agents to enhance efficacy and personalize treatment. Dose-dense chemotherapy should be prioritized in high-risk subtypes where the therapeutic benefit outweighs the potential adverse effects.

Keywords: neoadjuvant therapy; triple-negative breast cancer; receptor, ErbB-2; pathologic complete response; network meta-analysis; survival; toxicity.

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Innovative platform for chemoresistance: advancing functional precision medicine in breast cancer

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Objective: To validate a novel in vitro chemoresistance platform by assessing the chemoresistance profiles of naïve-treatment breast cancer and residual tumors after neoadjuvant chemotherapy. **Methods:** Patients with primary invasive breast cancer (naïve-treatment) and residual disease after neoadjuvant chemotherapy were included. Tumor samples were obtained and cultured on the chemoresistance platform with several cytotoxic drugs used for breast cancer treatment. After 72 hours, cell viability was evaluated, with resistance categorized as low, intermediate, and high. **Results:** Samples from 70 patients with primary breast cancer and 27 with residual disease after neoadjuvant chemotherapy were tested using the chemoresistance platform. Patients undergoing upfront surgery exhibited significantly favorable clinicopathological characteristics and prognosis, such as older age, smaller tumors, negative axillary lymph node, and luminal subtype, compared to those with residual disease who presented younger age, larger tumors, positive axillary lymph node, and more triple-negative breast cancer. The chemoresistance platform revealed distinct resistance patterns, with tumors showing higher resistance to taxanes than to anthracyclines and cyclophosphamide ($p < 0.05$). Residual disease after neoadjuvant chemotherapy exhibited significantly higher resistance to docetaxel, paclitaxel, doxorubicin, and cyclophosphamide than primary tumors, possibly indicating the acquisition of resistance during treatment. High resistance in residual disease after neoadjuvant chemotherapy correlated with a worse prognosis, with 8% experiencing local recurrence, 24% developing metastasis ($p = 0.0001$), and 12% dying from disease progression ($p = 0.0500$). Overall survival was 98.5% in the primary tumor group and 88% in the residual disease after neoadjuvant chemotherapy group. **Conclusion:** The chemoresistance platform effectively identified drug resistance patterns based on tumor characteristics, demonstrating the potential of functional precision medicine to personalize and improve breast cancer treatment by avoiding inefficient drugs, particularly in the context of treatment de-escalation.

Keywords: breast neoplasms; drug resistance; precision medicine.

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Machine learning-based transcriptomic model enhances prognostic stratification in breast cancer

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Objective: To identify prognostic genes and test machine learning models based on transcriptomics to predict overall survival rate of breast cancer patients. **Methods:** A systematic review of transcriptomic datasets was conducted and registered on DOI:10.17605/OSF.IO/65F87. A gene was classified as a core prognostic gene if it consistently indicated either good or poor prognosis in at least 50% of the datasets without conflicting outcomes. These core prognostic genes were analyzed to predict patient prognosis using ten different machine learning models: CoxBoost, Elastic-Net, GBM, Lasso, plsRcox, Ridge, Random Survival Forest, StepCox, SuperPC, and SVM. Models were trained on the largest dataset, and the others were used for validation. C1q/TNF-related protein (CTR_P) data were gathered to predict drug sensitivity across all patients. **Results:** Individual patient data from a total of 2,380 breast cancer cases from ten worldwide datasets was included. A set of 44 core prognostic genes was identified and used for subsequent machine learning analyses. CoxBoost demonstrated the highest C-index (0.7) and was selected as the final model. Pooling results with a random-effects model, patients classified as high-risk by our model had a hazard ratio (HR) of 3.1 (95% confidence interval [CI] 2.55–3.77) for overall survival and 3.7 (95%CI 2.67–4.25) for disease-free survival. The model achieved great area under the receiver operating characteristic (ROC) curve (AUC) values of 0.831, 0.721, and 0.724 for overall survival prediction at one, three, and five years, respectively. High-risk patients had higher TP53 mutations, while low-risk patients showed more PIK3CA and CDH1 mutations. High-risk tumors were enriched in Wnt/ β -catenin and TGF- β pathways, while low-risk tumors had more TP53 pathway activity and immune complement function. High-risk tumors also showed reduced sensitivity to docetaxel, gemcitabine, and 5-fluorouracil. **Conclusion:** This study demonstrated the effectiveness of our CoxBoost-based model in predicting overall survival and disease-free survival. Patients classified as high-risk by our model exhibited markedly lower overall survival, distinct genomic alterations, and resistance to key chemotherapies. These findings highlight the potential of transcriptomic data for patient stratification.

Keywords: gene expression profiling; breast neoplasms; prognosis.

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Omission of axillary surgery in early breast cancer with negative lymph nodes: a systematic review and meta-analysis of randomized clinical trials

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Objective: To assess whether there are differences in clinical outcomes regarding the omission of axillary surgery in patients with early-stage breast cancer and clinically negative nodes. **Methods:** A systematic review and meta-analysis including randomized clinical trials was conducted, comparing the no-axillary surgery with standard axillary-surgery (sentinel lymph node biopsy [SLNB] or axillary dissection [AD]). The study was registered in the International Prospective Register of Systematic Reviews (PROSPERO; under CRD420250653779) and the selection process followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. The search strategy included the terms: (“breast cancer”) AND (“axillary dissection” OR “axillary surgery” OR “no axillary surgery” OR “sentinel lymph node”) AND (“randomized study” OR “randomized clinical trial”) within the PubMed and Web of Science databases, with the last search in March 2025. The primary outcomes were overall survival, disease-free survival, and axillary recurrence rates. Data selection was performed using Rayyan software. Meta-analysis was performed using RevMan version 5.4 software, with dichotomous variables assessed using odds ratios (OR) and 95% confidence intervals (CI). Heterogeneity was assessed using the I^2 test and corrected using a random-effects model. The risk of bias was assessed with the RoB-2 instrument. **Results:** Of the 550 retrieved studies, 91 duplicates were excluded, and after data selection, a total of 8,806 patients from seven randomized clinical trials were included in the analysis. Of these, 2,915 patients were in the no-surgery group and 5,891 in the axillary-surgery group. Among these trials, two compared no-axillary surgery with SLNB, while five compared no-axillary surgery with AD. Overall survival (OR 1.02; 95%CI 0.86–1.20; $p=0.84$; $I^2=36\%$) and disease-free survival (OR 0.80; 95%CI 0.63–1.00; $p=0.05$; $I^2=63\%$) showed no significant differences between the groups. Axillary recurrence was lower in the axillary-surgery group (OR 0.18; 95%CI 0.10–0.31; $p<0.01$; $I^2=39\%$). **Conclusion:** Omission of axillary surgery in early-stage breast cancer with negative nodes did not affect overall survival or disease-free survival rates.

Keywords: breast cancer; sentinel lymph node biopsy; disease-free survival; survival rate; randomized clinical trials.

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Updated meta-analysis of randomized trials: pathological complete response as a prognostic marker for survival in breast cancer treated with neoadjuvant chemotherapy

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Objective: To present an updated meta-analysis including only randomized clinical trials (RCTs) evaluating the prognostic impact of pathological complete response (pCR) on overall survival (OS) and disease-free survival (DFS) in breast cancer patients treated with neoadjuvant chemotherapy, expanding on previous meta-analyses that combined RCTs and real-world evidence data. **Methods:** A systematic review and meta-analysis was conducted according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. RCTs reporting pCR after neoadjuvant chemotherapy and survival outcomes (OS and DFS) were included. Hazard ratios (HR) and 95% confidence intervals (CI) were extracted or estimated. Heterogeneity was assessed using the I^2 statistic, and publication bias was evaluated through funnel plots, Egger's, and Begg's tests. The study was registered in the International Prospective Register of Systematic Reviews (PROSPERO), under CRD42024558811. **Results:** Thirteen RCTs (n=6,977 patients) were included; pCR was significantly associated with improved OS (15% higher survival) and DFS (45% higher survival) compared to non-pCR patients. The benefit was greater in triple-negative breast cancer (TNBC) and human epidermal growth factor receptor-type 2 (HER2)-positive subtypes. In TNBC, pCR was linked to a 45% increase in OS and a 71% increase in DFS; in HER2-positive tumors, pCR was associated with a 13% increase in OS and a 23% increase in DFS. The pooled analysis showed significant associations (OS: $Z=10.3$, $p=0.03$; DFS: $Z=20.2$, $p=0.02$). Moderate-to-high heterogeneity was observed (OS: $I^2=60\%$; DFS: $I^2=75\%$). **Conclusion:** This updated meta-analysis, based exclusively on RCTs, confirms that pCR is a strong prognostic marker for survival in early-stage breast cancer, especially in TNBC and HER2-positive subtypes, providing robust evidence beyond previous analyses that mixed RCTs with real-world evidence.

Keywords: breast neoplasms; neoadjuvant therapy; pathologic complete response; randomized controlled trial; survival rate.

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Metronomic versus standard fixed dosing chemotherapy in human epidermal growth factor receptor-type 2-negative metastatic breast cancer: a reconstructed individual patient data meta-analysis

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Objective: To systematically evaluate and compare the efficacy and safety of metronomic chemotherapy versus standard fixed-dose chemotherapy in patients with human epidermal growth factor receptor-type 2 (HER2)-negative metastatic breast cancer through a reconstructed individual patient data meta-analysis. **Methods:** This systematic review and meta-analysis adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and was registered in the International Prospective Register of Systematic Reviews (PROSPERO; under CRD42025645145). Randomized clinical trials comparing metronomic dosing with standard chemotherapy in HER2-negative metastatic breast cancer were identified through comprehensive searches on MEDLINE, Embase, and Cochrane databases. Primary outcomes included reconstructed individual patient data-based progression-free survival and overall survival. Secondary outcomes were objective response rate, disease control rate, and toxicity, assessed via pooled odds ratios (OR). **Results:** Four randomized clinical trials totaling 436 patients were analyzed. Compared to standard chemotherapy, metronomic chemotherapy significantly reduced progression-free survival (hazard ratio [HR] 1.22; 95% confidence interval [CI] 1.01–1.49; $p < 0.05$) and overall survival (HR 1.38; 95%CI 1.08–1.76; $p < 0.05$). There were no statistically significant differences in objective response rate (OR 1.26; 95%CI 0.77–2.08; $p > 0.05$) and disease control rate (OR 0.77; 95%CI 0.50–1.17; $p > 0.05$). Patients treated with metronomic chemotherapy experienced significantly fewer incidences of vomiting (OR 0.28; 95%CI 0.10–0.76; $p < 0.05$) and alopecia (OR 0.16; 95%CI 0.08–0.31; $p < 0.05$). No significant differences were observed for diarrhea, anemia, neutropenia, or hand-foot syndrome between groups. **Conclusion:** Metronomic chemotherapy is associated with a better toxicity profile, specifically reducing alopecia and vomiting, while maintaining similar response and disease control rates. However, standard fixed-dose chemotherapy provided superior progression-free and overall survival outcomes, thus remaining the recommended treatment standard. Clinicians should weigh the trade-off between quality of life and survival outcomes carefully in personalized treatment discussions.

Keywords: chemotherapy; breast cancer; meta-analysis.

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CDK4/6 inhibitor plus endocrine therapy after progression on CDK4/6 inhibition in HR+/HER2- advanced breast cancer: a systematic review and meta-analysis (ReIGNITE study)

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Objective: To systematically evaluate the efficacy and safety of cyclin-dependent kinase 4 and 6 inhibitors (CDK4/6) combined with endocrine therapy (ET) compared to ET alone in patients with hormone receptor-positive and human epidermal growth factor receptor-type 2-negative (HR+/HER2-) advanced breast cancer who progressed to prior CDK4/6 therapy.

Methods: This systematic review and meta-analysis adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and was registered in the International Prospective Register of Systematic Reviews (PROSPERO), under CRD420251007031). Randomized clinical trials were identified through comprehensive searches on PubMed, Cochrane, Embase databases, and in ASCO, ESMO, and SABCs conference proceedings. The primary outcome was progression-free survival, analyzed using hazard ratios (HR) with a random-effects model and 95% confidence intervals (CI). Adverse effects were evaluated through pooled odds ratios (OR). **Results:** Five randomized clinical trials encompassing 1,184 patients were included. Overall, CDK4/6 plus ET significantly improved progression-free survival versus ET alone, yielding a HR of 0.72 (95%CI 0.56–0.92; $p < 0.05$). Subgroup analyses highlighted superior efficacy when patients switched to a different CDK4/6 following progression (HR 0.61; 95%CI 0.48–0.77; $p < 0.05$), whereas continuation of the same agent showed no significant benefit (HR 0.93; 95%CI 0.68–1.28; $p = 0.15$). Genetic profiling demonstrated that patients harboring PIK3CA mutations experienced notable progression-free survival improvement (HR 0.71; 95%CI 0.52–0.98; $p < 0.05$), whereas no significant benefit was observed among patients with ESR1 mutations (HR 0.86; 95%CI 0.60–1.24; $p = 0.06$). CDK4/6 plus ET significantly increased odds of anemia (OR 2.67; 95%CI 1.45–4.93; $p < 0.05$), neutropenia (OR 19.27; 95%CI 9.94–37.35; $p < 0.05$), thrombocytopenia (OR 4.51; 95%CI 2.20–9.25; $p < 0.05$), and diarrhea (OR 4.29; 95%CI 1.28–14.39; $p < 0.05$) compared to ET alone. **Conclusion:** Treatment with CDK4/6 combined with ET beyond CDK4/6 progression demonstrated significant clinical benefit in HR+/HER2- advanced breast cancer, particularly when switching between different CDK4/6. Patients with PIK3CA mutations notably benefitted from this strategy. These findings provide critical insights for the refinement of future clinical guidelines.

Keywords: cyclin-dependent kinase inhibitor proteins; breast neoplasms; meta-analysis.

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Gastrin-releasing peptide receptor as a prognostic biomarker and mediator of doxorubicin resistance in breast cancer

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Objective: This study aimed to verify the expression and prognostic implications of gastrin-releasing peptide receptor (GRPR) in breast cancer by analyzing multiple cancer-related databases and complementary in vitro assays. **Methods:** GRPR expression and its association with prognosis in breast cancer were assessed using different databases: OncoDB, Gent2, and GEPIA. In vitro experiments were performed using MCF-7 and MDA-MB-231 breast cancer cell lines, both naïve and treated with cytotoxic drugs. GRPR expression and cell viability were assessed to investigate potential roles in drug resistance. **Results:** Bioinformatics analysis revealed overexpression of GRPR in breast cancer compared to healthy tissue. GRPR expression positively correlated with estrogen receptor and low-grade tumors ($p < 0.001$). Among molecular subtypes, luminal A exhibited the highest levels of GRPR, followed by luminal B, human epidermal growth factor receptor-type 2-positive (HER2+), triple-negative breast cancer (TNBC), and basal. Prognostic analysis using the Gent2 database indicated that higher GRPR expression was associated with improved overall survival ($p = 0.004$). However, GEPIA analysis did not confirm a statistically significant survival difference. In vitro, both cell lines treated with doxorubicin showed decreased viability ($p < 0.0001$), along with a significant increase in GRPR expression, with a fold change of 5.7 ($p < 0.0001$) for MCF-7 and 2.7 ($p = 0.007$) for MDA-MB-231, suggesting that surviving cells express higher levels of GRPR. This pattern was not observed with cyclophosphamide, indicating a potential role of GRPR in acquired resistance to doxorubicin. **Conclusion:** GRPR expression is associated with estrogen receptor positivity and may indicate a favorable prognosis in breast cancer. Nonetheless, its upregulation following doxorubicin exposure suggests a potential role in chemoresistance. The findings support GRPR as a promising biomarker for prognosis and a potential therapeutic target, particularly in the context of resistance to anthracycline-based chemotherapy.

Keywords: breast neoplasm; gastrin-releasing peptide; drug resistance.

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Breast surgery for metastatic breast cancer: an update of Cochrane systematic review

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Objective: To assess the effects of breast surgery on women with de novo metastatic breast cancer. **Methods:** The inclusion criteria were randomized controlled trials of women with de novo metastatic breast cancer that compared breast surgery plus systemic therapy versus systemic therapy alone on the databases: Cochrane Breast Cancer Specialised Register, PubMed Central and MEDLINE, and Embase (by OvidSP), on April 19, 2023, following the Cochrane handbook methodology. **Results:** This is an update of the Cochrane systematic review published in 2018, approved by the ethics committee and had its research protocol published in 2014. Five randomized clinical trials were selected, including 1,368 women with de novo metastatic breast cancer in the review. Breast surgery does not reduce mortality in women with de novo metastatic breast cancer (hazard ratio [HR] 0.89; 95% confidence interval [CI] 0.75–1.05, $p=0.09$). In subgroup analyses for women with luminal tumors, the addition of breast surgery to systemic treatment appears to increase overall survival, reducing the risk of death by 18% (HR 0.82; 95%CI 0.69–0.96). Breast surgery reduces the risk of local disease progression (HR 0.43; 95%CI 0.32–0.58) and does not improve metastatic disease control (HR 1.19; 95%CI 0.86–1.18). The quality of life of women undergoing locoregional treatment is similar to those undergoing systemic treatment alone in 24 months of follow-up (mean difference 2.74; 95%CI -2.22–7.70). **Conclusion:** Based on existing evidence from five randomized clinical trials, the impact of adding breast surgery to the management of de novo metastatic breast cancer is likely to enhance the local control of the disease. However, breast surgery does not improve overall survival and distant progression-free survival. Locoregional treatment does not seem to affect the quality of life for these women.

Keywords: secondary; breast cancer; breast surgery; breast-conserving surgery; mastectomy; lumpectomy; segmentectomy.

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TP53 genetic variants identified in Brazilian women with hereditary breast cancer: a systematic review of the literature

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Objective: This study aimed to describe the genetic variants of TP53 in Brazilian patients with hereditary breast cancer. **Methods:** The systematic review was registered in the International Prospective Register of Systematic Reviews (PROSPERO; under CRD420250656510), and conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) recommendations. The database consulted was PubMed, and the search strategy was (familial OR hereditary) breast cancer AND Brazil. Articles that investigated TP53 genetic variants in hereditary breast cancer patients using genetic sequencing or polymerase chain reaction were included. **Results:** Initially, 566 articles were identified, of which 25 were included in the study. The selected studies comprised 7,730 participants and were carried out in the South (n=4), Southeast (n=17), Northeast (n=2), and Central-West (n=2) regions of the country. The studies described 31 pathogenic variants of TP53, and the most common was p.(Arg337His), described in 22 studies. The p.(Arg273His) variant was reported in three studies, and p.(Gly245Ser) and p.(Arg248Gln) in two studies. The p.(Arg337His) variant, described in 22 studies (296 patients), resulted in an approximate frequency of 3.8%, and appears to have been introduced into the Brazilian population through a founder effect. Its prevalence is high among inhabitants of the South and Southeast regions, with frequencies ranging from 0.9% to 12.0%, according to the age and geographic origin of patients. Most of the included studies focused on the South and Southeast regions. **Conclusion:** This literature review demonstrates the profile of TP53 pathogenic variants described in the Brazilian population with hereditary breast cancer and reflects the inequality of gene sequencing resources in the country, reflecting the concentration of studies in the South and Southeast regions. It also highlights the importance of making genetic tests available in the Unified Health System, given the socioeconomic vulnerability of a large portion of Brazilian women.

Keywords: genetic testing; neoplastic syndromes, hereditary; gene P53.

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Prognostic impact of neoadjuvant chemotherapy-induced changes in immunohistochemical markers on survival outcomes in breast cancer: a systematic review and meta-analysis

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Objective: To evaluate the association between neoadjuvant chemotherapy (NAC)-induced alterations in immunohistochemical (IHC) marker expression and overall survival and disease-free survival in breast cancer patients. **Methods:** A systematic review and meta-analysis was conducted with searches performed on PubMed, Embase, and Cochrane Library databases to identify studies evaluating changes in IHC marker expression after NAC and their correlation with survival outcomes. Eligible studies comprised randomized controlled trials, cohort studies, and case-control studies involving breast cancer patients undergoing NAC. Data regarding changes in IHC markers and survival outcomes were extracted and analyzed utilizing a random-effects model to compute pooled odds ratios with 95% confidence intervals. The I^2 statistic was applied to assess heterogeneity, while publication bias was evaluated through funnel plot analysis and Egger’s test. The study protocol is registered in the International Prospective Register of Systematic Reviews (PROSPERO), under CRD420250655833. **Results:** The meta-analysis included ten studies. The pooled analysis indicated that a transition from positive to negative hormone receptor status (estrogen and progesterone receptors) following NAC was linked to a notable reduction in overall survival and disease-free survival. In a similar manner, the conversion from positive to negative human epidermal growth factor receptor-type 2 (HER2) status was associated with decreased overall survival and disease-free survival. **Conclusion:** NAC significantly alters IHC marker expression, which correlates strongly with survival outcomes in breast cancer patients. The conversion of hormone receptors and HER2, reduction of Ki-67, and increase in tumor-infiltrating lymphocytes following NAC are significant prognostic indicators. The findings highlight the necessity for regular reevaluation of IHC status following NAC to guide personalized adjuvant therapy approaches and enhance patient outcomes. Additional prospective research is necessary to confirm these associations and investigate the underlying molecular mechanisms.

Keywords: breast cancer; neoadjuvant chemotherapy; immunohistochemistry; survival; lymphocytes, tumor-infiltrating.

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A systematic review and extracted individual patient data meta-analysis of long-term outcomes in triple-negative breast cancer after a pathologic complete response: does the type of neoadjuvant therapy matter?

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Introduction: Neoadjuvant chemotherapy is the standard of care for stage IB-III triple-negative breast cancer (TNBC), with pathological complete response (pCR) strongly associated with survival. Although the escalation of neoadjuvant therapies with platinum and immune checkpoint inhibitors (ICI) improves pCR rates and long-term outcomes, patients with pCR in the control arms of pivotal trials also show favorable outcomes. Whether the type of neoadjuvant regimen leading to pCR impacts long-term survival differently is largely unknown. **Objective:** Correlate the type of neoadjuvancy performed for complete pathological response with the survival rate. **Methods:** A systematic review and meta-analysis was conducted, searching the databases PubMed, Embase, and Cochrane, and conference proceedings for phase II and III trials including early-stage patients with TNBC with pCR. A pooled analysis of Kaplan-Meier-derived individual patient data was performed for event-free survival and overall survival, with subgroup analyses by treatment regimens. **Results:** Of 2,830 identified publications, 18 trials (16 randomized and 2 single-arm) comprising 3,430 patients with TNBC and pCR were included. Neoadjuvant ICI with chemotherapy improved event-free survival (hazard ratio [HR] 0.67; 95% confidence interval [CI] 0.50–0.89; $p < 0.01$) compared with chemotherapy-only regimens, with no significant overall survival difference for patients with pCR (HR 0.84; 95%CI 0.50–1.41; $p = 0.51$). In contrast, event-free and overall survival were not significantly different regardless of platinum use (HR 0.55; 95%CI 0.20–1.50; $p = 0.24$ and HR 0.33; 95%CI 0.09–1.22; $p = 0.10$, respectively). Similarly, anthracycline-containing regimens showed comparable event-free survival to anthracycline-free regimens (HR 0.86; 95%CI 0.51–1.45; $p = 0.58$). For patients with pCR after ICI therapy, the benefit of adjuvant ICI for event-free or overall survival was not statistically significant (HR 1.16; 95%CI 0.55–2.44; $p = 0.70$ and HR 2.91; 95%CI 0.40–21.37; $p = 0.29$, respectively). **Conclusion:** Neoadjuvant ICI-based regimens improved event-free survival in early-stage patients with TNBC with pCR. However, adjuvant ICI after pCR appears to offer no additional benefit, and event-free survival remains unaffected by neoadjuvant chemotherapy type (with or without platinum or anthracycline).

Keywords: meta-analysis; triple-negative breast cancer; pathologic complete response; immune checkpoint inhibitor; neoadjuvant treatment.

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Impact of mindfulness practices on the quality of life of women with breast cancer: systematic review

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Objective: To determine the impact of mindfulness practices on quality of life, depression, anxiety, sleep, stress, and pain in women with breast cancer. **Methods:** A systematic review was conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and based on randomized clinical trials that included women with breast cancer who underwent mindfulness practices. The study was registered in the International Prospective Register of Systematic Reviews (PROSPERO; under CRD42024502665) and included a risk of bias analysis using the RoB2 tool, statistical analysis of standardized mean differences (SMD) of questionnaire scores used to assess outcomes, meta-analysis with R software, and evidence certainty through the GRADE scale. **Results:** A total of 29 randomized studies from around the world were included, comprising 3,407 women with breast cancer; 1,680 of them received the intervention (mindfulness practice). The risk of bias was not significant in the studies. In the meta-analysis, for quality of life, mindfulness improved the SMD by 0.84 (95% confidence interval [CI] 0.19 to 1.49) with low evidence certainty. For depression, the SMD decreased by 0.71 (95%CI -1.19 to -0.22) with moderate certainty. In anxiety, the SMD decreased by 0.48 (95%CI -0.73 to -0.24) with moderate certainty. Sleep improved with an SMD of 0.76 (95%CI -1.37 to -0.14) with moderate certainty. Stress decreased by SMD of 0.73 (95%CI -1.53 to -0.07), but with very low certainty, and pain decreased by SMD of 0.21 (95%CI -0.61 to 0.19), with low evidence certainty. All meta-analyses showed considerable heterogeneity of the studies. **Conclusion:** Mindfulness practices may slightly improve quality of life and reduce depression and anxiety in women with breast cancer. For sleep, stress, and pain, the evidence is uncertain. Despite the mild impact demonstrated in this study, the broad socioeconomic accessibility of mindfulness practices may support clinical recommendation.

Keywords: systematic review; breast neoplasms; survivorship; mindfulness; quality of life.

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Epigenetic modulation of three-dimensional telomeric architecture by hypomethylating agent 5-aza-2'-deoxycytidine in luminal and triple-negative breast cancer cells

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Introduction: Genomic instability is a hallmark of cancer and is strongly associated with telomeric dysfunction. Telomeres, structures that protect the ends of chromosomes, when shortened or spatially disorganized, can lead to chromosomal fusion, deoxyribonucleic acid (DNA) breakage, and aberrant chromosome segregation. **Objective:** This study evaluated the impact of the hypomethylating agent 5-aza-2'-deoxycytidine (5-aza-dC) on the three-dimensional reorganization of telomeres in luminal A (MCF7) and triple-negative (DU4475) breast cancer cell lines, focusing on the relationship between telomeric architecture and genomic instability. **Methods:** Cells were treated with 5-aza-dC (10, 20, 30, and 50 μM) for 72 hours. Analysis was performed using Q-FISH and TeloView[®], assessing the following parameters: number of telomeres, telomere aggregates, signal intensity (length), spatial distribution, and nuclear volume. Statistical evaluation was performed using analysis of variance (ANOVA) with Bonferroni post-test ($p < 0.05$). **Results:** The assays demonstrated that 5-aza-dC induced statistically significant alterations in telomeric parameters, particularly at concentrations of 30 and 50 μM . In MCF7, there was a reduction in the number of telomeres (from 58.4 standard deviation ± 6.1 to 42.2 ± 4.8 ; $p < 0.001$) and aggregates (from 8.3 ± 1.2 to 4.1 ± 0.9 ; $p < 0.0001$), indicating reduced genomic instability. In DU4475, nuclear volume decreased (up to 40%; $p < 0.0001$), and changes in the spatial distribution ($p < 0.01$) suggested nuclear reprogramming and impact on 3D genome organization. **Conclusion:** 5-aza-dC promotes 3D telomeric reorganization associated with the reduction of classical signs of genomic instability. This reinforces the role of telomeres not only as markers of cellular aging but also as epigenetic sensors of chromosomal stability in breast tumors, including luminal and triple-negative cell lines.

Keywords: breast neoplasms; telomeres; genomic instability.

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Immediate breast reconstruction using a latissimus dorsi flap: is lipofilling or implant-based reconstruction better?

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Objective: This study explores the outcomes of immediate breast reconstruction using the latissimus dorsi muscle flap (LDMF), comparing two approaches: LDMF combined with prosthesis (implant-based) and LDMF with fat grafting (lipofilling). The goal was to evaluate early and late postoperative complications and help determine which of these methods is more effective in terms of complications, surgical duration, hospital stay, and long-term outcomes. **Methods:** A 20-year retrospective cohort study was conducted involving 71 patients who underwent mastectomy with immediate reconstruction using LDMF. Of these, 35 underwent reconstruction with a prosthesis and 36 with fat grafting. Clinical and pathological characteristics, surgical duration, length of hospital stay, and early and late postoperative complications were evaluated. Minor complications (seroma, superficial infection, superficial dehiscence) and major complications (hematoma, deep dehiscence, deep infection, flap loss, life-threatening events) were documented. Data were analyzed using Fisher's exact test and the Kruskal-Wallis test, with significance set at $p < 0.05$. **Results:** Both groups demonstrated comparable clinical characteristics with similar average ages (49.65 years in the implant group and 49.12 years in the lipofilling group; $p = 0.497$). No statistically significant differences were found in body mass index, comorbidities, smoking habits, or clinical staging. The prosthesis group had a significantly shorter hospital stay (2.2 vs. 2.8 days; $p < 0.001$) with no significant increase in operative time. Notably, the implant group exhibited a rate of capsular contracture (25.7%) and unplanned implant removal (17.1%). Overall, 37.1% of patients undergoing LDMF with prosthesis experienced implant-related complications. Minor complications, specifically seroma formation, were common but statistically similar across groups. Importantly, fat grafting required fewer additional surgeries to complete the breast reconstruction process than implant-based reconstructions. **Conclusion:** The LDMF with fat grafting presented a reliable, lower-complication alternative to implant-assisted reconstructions in immediate breast reconstruction following mastectomy. This technique demonstrated significant promise as a new standard in reconstructive breast surgery.

Keywords: breast reconstruction; myocutaneous flap; adipose tissue.

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Impact of short-duration physical exercise on the upper limb of women treated for breast cancer: the Blue Flower Project

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Objective: To evaluate the impact of short-duration physical exercise on quality of life and functionality, range of motion, and upper limb volumetry in women treated for breast cancer. **Methods:** This is a prospective cohort study. Women with a diagnosis of breast cancer who had completed cancer treatment were included. The intervention lasted 24 weeks, with a progressive exercise protocol using body weight, six days per week, lasting 12 minutes per day. Activities were performed in person in groups once a week and individually through a specific application from the Blue Flower Project five times a week. The variables assessed were quality of life related to upper limb dysfunctions (disabilities of the arm, shoulder, and hand questionnaire; DASH), shoulder functionality (goniometer; BAIOBIT[®]), subclinical arm volume/lymphedema, and body composition (bioimpedance; inBody 770[®]). All assessments were conducted at baseline, three months, and six months. Repeated measures analysis of variance (ANOVA) were applied. A significance level of 5% ($p < 0.050$) was assumed for statistical significance. **Results:** Of the 56 women who started the program, 34 completed the 24 weeks. The mean age was 57 (standard deviation ± 8) years. There was a significant improvement in quality of life related to upper limb dysfunction measured by DASH ($p = 0.001$) and in the range of motion for flexion ($p = 0.017$), adduction ($p = 0.007$), abduction ($p = 0.005$), medial rotation ($p = 0.011$), and lateral rotation of the shoulder ($p = 0.01$). Patients also showed a reduction in upper limb volumetry measured by tape ($p = 0.017$) and in lean muscle mass of the arms assessed by bioimpedance ($p = 0.006$). **Conclusion:** Daily physical activity for 12 minutes had a significant impact on quality of life related to upper limb functionality, range of motion in all movements, and a reduction in arm volumetry in women treated for breast cancer.

Keywords: breast cancer; lymphedema; physical activity; quality of life.

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The effects of resistance training versus combined training on the health-related quality of life levels of breast cancer patients undergoing neoadjuvant chemotherapy

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Objective: To compare the effects of resistance training (RT), combined training (CT), and control group (CON) on the health-related quality of life (HRQoL) of breast cancer patients undergoing neoadjuvant chemotherapy. **Methods:** A randomized clinical trial (Brazilian Registry of Clinical Trials n° 16497) was conducted with 19 women undergoing neoadjuvant chemotherapy, distributed in RT (n=6; age 44.33 standard deviation ± 5.50), CT (n=6; age 43.80 ± 8.64), and CON (n=6; age 40.42 ± 7.96). The RT group performed only resistance training, while the CT group performed the same resistance training protocol adding an aerobic training session at the end. Both groups (RT and CT) underwent physical exercise sessions once a week for 12 weeks. The CON group received only the usual care. HRQoL was assessed by the Functional Assessment of Cancer Therapy (FACT-B). Data normality was analyzed by the Kolmogorov-Smirnov test. A one-way analysis of variance (ANOVA) was conducted for parametric data to compare groups at baseline. Finally, a factorial ANOVA with repeated measures was employed to evaluate the effects of group, time, and group-by-time interaction. The analysis followed the intention-to-treat principle, so that all randomized participants were included in the analysis, regardless of protocol adherence or data completeness. The study was approved by the ethics committee of the Federal University of Goiás (CAAE: 50717115.4.0000.5083). **Results:** One-way ANOVA showed that the groups had similar HRQoL scores at baseline (p=0.93). The factorial ANOVA did not detect significant effects for group (p=0.87), time (p=0.59), or group-by-time interaction (p=0.87), indicating that HRQoL levels did not change throughout the intervention, and were not influenced by different training or control protocols. **Conclusion:** There were no significant changes in HRQoL levels in the RT, CT, and CON groups after 12 weeks of physical exercise during neoadjuvant chemotherapy treatment.

Keywords: cancer; sedentary behavior; physical exercise.

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Utilizing machine learning to identify biomarkers of chemoresistance in breast cancer: a complementary analysis with in vitro resistance platforms

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Objective: This study aimed to use a machine learning algorithm to identify biomarkers of resistance to neoadjuvant chemotherapy (NACT) in breast cancer and validate these findings in a preliminary patient cohort, comparing results with an in vitro resistance platform. **Methods:** Clinicopathological data from breast cancer samples before NACT were analyzed, using public datasets and a proprietary database. Differential analyses compared patients with residual disease versus pathological complete response (pCR) to NACT. The XGBoost algorithm, a tree-based machine learning technique, and the SHAP tool were employed for interpretation. Additionally, tumor samples from patients with primary invasive breast cancer referred to NACT were collected and cultured in a chemoresistance platform. The samples were tested with cytotoxic drugs to classify the tumors based on cell viability. **Results:** These datasets included 1,012 patients exhibiting heterogeneous data. The XGBoost algorithm achieved 82% accuracy in classifying samples into pCR and residual disease, with SHAP analysis highlighting age, estrogen receptor status, and grade as key resistance predictors. Among ten patient samples, five achieved pCR, one had a good response with microinvasion, and four presented poor responses. In the chemoresistance platform, patients with pCR exhibited low resistance to the drugs used in chemotherapy, and those with poor responses demonstrated high rates of intermediate-to-high resistance to the drugs already used. Distinct resistance patterns to treatments not used in clinics were observed, suggesting these drugs could be alternative treatment options. The algorithm predicted NACT response with 81.8% accuracy in this cohort. **Conclusion:** These findings highlighted the capacity of the XGBoost algorithm in predicting breast cancer resistance, and in combination with the chemoresistance platform, allow the development of personalized therapeutic strategies.

Keywords: breast neoplasms; neoadjuvant chemotherapy; drug resistance; machine learning.

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Efficacy and safety of capivasertib for breast cancer patients: a systematic review and meta-analysis of randomized controlled trials

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Introduction: Capivasertib, an oral AKT inhibitor, has shown potential in treating breast cancer by targeting the PI3K/AKT pathway. **Objective:** This meta-analysis aimed to assess the efficacy and safety of capivasertib in breast cancer by summarizing high-quality evidence from randomized controlled trials. **Methods:** PubMed, Embase, and Cochrane databases were searched to identify randomized controlled trials evaluating capivasertib, an oral inhibitor of all three isoforms of the serine/threonine kinase AKT, in patients with breast cancer. The outcomes of interest included overall survival, progression-free survival, objective response rate, and grade 3–5 adverse events. When possible, subgroup analyses were performed for patients with and without PIK3CA/AKT1/PTEN alterations. Data pooling was performed using a random-effects model. Statistical analyses were conducted using the “meta” and “metaprop” packages in RStudio. **Results:** A total of 631 studies were screened. Four randomized controlled trials with a total of 548 patients were included in this meta-analysis. Among these, 124 patients received capivasertib+paclitaxel, while 424 received capivasertib+fulvestrant. A total of 236 patients were part of the PIK3CA/AKT1/PTEN-altered subpopulation, while 243 were in the non-altered subpopulation. For progression-free survival, the capivasertib group demonstrated a hazard ratio (HR) of 0.69 (0.54–0.89), heterogeneity (I^2) of 64%, and p-value (p)<0.01. For overall survival, the HR was 0.67 (0.50–0.89; $I^2=0$; $p<0.01$). No statistically significant results were observed in the subgroup analysis of PIK3CA/AKT1/PTEN mutations for overall or progression-free survival. The objective response rate was 0.34 (0.20–0.52; $I^2=90.0\%$) for the overall population and 0.40 (0.23–0.60; $I^2=83.2\%$) for patients with PIK3CA/AKT1/PTEN alterations. Furthermore, the incidence of adverse events of grade ≥ 3 was 54% (43%–65%; $I^2=82.7\%$). **Conclusion:** This meta-analysis supports the efficacy of capivasertib in improving overall and progression-free survival in breast cancer patients. However, the high rate of grade 3–5 adverse events suggests the need for careful monitoring. Future research should focus on reducing side effects and exploring the effects of capivasertib in specific molecular subgroups.

Keywords: breast neoplasms; progression-free survival; survival.

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The role of liquid biopsy in breast cancer screening and monitoring: a systematic review of literature

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Objective: This study evaluated the potential of liquid biopsy for breast cancer early detection, tumor monitoring, and personalized treatment by analyzing circulating biomarkers. It also investigated its ability to reduce invasive procedures and to expand diagnostic access in low-resource settings. **Methods:** This is a systematic review of the literature that followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines, and was registered in the International Prospective Register of Systematic Reviews (PROSPERO), under CRD420251019679. The PubMed database was searched using the operators “liquid biopsy” AND “breast cancer.” The applied filters were “last 10 years”, “free full text”, “humans”, and “women”. PICO criteria were used as follows: Participants: women with breast cancer; Intervention: liquid biopsy for screening and monitoring breast cancer, analyzing circulating tumor deoxyribonucleic acid (ctDNA), circulating tumor cells (CTCs), micro ribonucleic acid (miRNAs), and extracellular vesicles (EVs); Comparison: conventional diagnostic and monitoring methods; Outcome: potential of liquid biopsy for early detection, monitoring, and reduction of invasive procedures. Out of 212 articles identified and reviewed, 152 were included after applying the eligibility criteria.

Results: The most frequent biomarkers were ctDNA, CTCs, miRNAs, and EVs, which showed potential clinical importance. CtDNA, the most validated marker, correlated with tumor burden, treatment resistance mutations, and prognosis, particularly with ESR1 and PIK3CA mutations linked to endocrine resistance. High CTC counts are associated with poor prognosis and increased metastatic risk. Exosomal miRNA signatures improved diagnostic accuracy, especially with cancer antigen (CA) 15-3 and carcinoembryonic antigen (CEA). Multi-omics approaches combining miRNA and ctDNA show >90% sensitivity in early detection. Challenges included low sensitivity in early-stage tumors, tumor heterogeneity, and financial cost. **Conclusion:** Liquid biopsy is a less invasive alternative for breast cancer screening and monitoring, improving disease stratification accuracy. Circulating tumor DNA detects cancer at different stages and identifies biomarkers for personalized treatment. By reducing invasive biopsies, it enhances quality of life and adherence, especially in resource-limited settings.

Keywords: breast cancer; cancer screening test; circulating tumor DNA; liquid biopsy; tumor biomarkers.

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Evaluation of the impact and evolution of community health agents in early breast cancer detection in the Itaberaí Project (Goiás)

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Objective: This study aimed to assess the impact and evolution of the participation of Community Health Agents (CHAs) in the early detection of breast cancer in the Itaberaí Project, Goiás, through their adherence and performance.

Methods: The methodology was based on structured training for CHAs, including educational activities, practical simulations, and constant supervision, ensuring greater confidence in performing the examination and improving communication skills. This strategy has contributed to enhancing patient care flow, strengthening professional confidence, and promoting more humanized and effective healthcare. **Results:** The outcomes indicated a positive impact, with improved disease identification and increased access for women to appropriate healthcare. In 2022, initial resistance was observed among some professionals (24; 54.1%) due to insecurity in performing the breast physical examination and lack of knowledge about the benefits of the initiative. However, with continuous training, adherence significantly increased (9; 21.4%). Statistical analyses using the chi-square test demonstrated a significant difference between initial resistance and adherence after training ($\chi^2=14.86$; $p=0.0001$). Between 2024–2025, most CHAs were more committed and aware of the importance of their role in prevention. The first cycle of the project (2022–2024) was structured into three stages, allowing for gradual improvement in the strategy. Initially, the project included eight Basic Health Units (UBSs), expanding to ten, with the participation of 76 CHAs, divided into a control group (34; 44.7%) and an intervention group (42; 55.3%). In the intervention group, six (14.3%) male CHAs did not perform the examination, and two (4.8%) female CHAs chose not to, with one (2.4%) later adhering after training and professional support. **Conclusion:** The growing adherence of CHAs reinforces the importance of training and confirms the effectiveness of the initiative, establishing the Itaberaí Project as a model for primary care, prevention, and community healthcare, highlighting its positive impact on public health.

Keywords: community health workers; breast cancer; early detection of cancer.

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Stage I human epidermal growth factor receptor-type 2-positive breast cancer: is systemic therapy required?

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Introduction: Recent SEER (USA Surveillance, Epidemiology, and End Results) data suggest that patients with tumors ≤ 1 cm achieve excellent outcomes regardless of chemotherapy use. **Objective:** This study aimed to evaluate the clinical characteristics, treatment patterns, and outcomes of patients with human epidermal growth factor receptor-type 2 positive (HER2+) stage I breast cancer. **Methods:** A cohort of stage I HER2+ breast cancer patients treated between 2008 and 2023 at a large cancer center in Brazil was assessed for progression-free survival based on anti-HER2 adjuvant therapy use and related factors via Cox regression. **Results:** A total of 115 patients with stage I HER2+ breast cancer were identified, with a median age of 55 years (range 22–80). Most tumors were pT1c (65.7%), while 14.9% were pT1mic/pT1a, and 19.2% were pT1b. Tumor grade distribution was 8.3% grade 1; 52.3% grade 2; and 39.4% grade 3. Additionally, 78.3% had high Ki67 (>20%), 65.8% were estrogen receptor positive, and 51.8% were progesterone receptor positive. Systemic therapy with chemotherapy plus trastuzumab (Ch+T) was administered to 93 patients (80.8%). No significant differences in baseline characteristics were observed between patients who received or did not receive Ch+T, except for tumor stage. Specifically, 27.7% of patients with pT1mic/pT1a, 72.7% with pT1b, and 94.7% with pT1c received Ch+T ($p < 0.001$). After a median follow-up of 80 months, eight recurrences and five deaths (two unrelated to breast cancer) were recorded. Five new primary non-breast tumors were identified. The 7-year progression-free survival rate was 93.3% for patients who received Ch+T and 95.0% for those who did not (HR 2.15; 95% confidence interval [CI] 0.27–17.02, $p = 0.467$). In Cox regression, no factors, including tumor stage, grade, Ki67 index, estrogen and progesterone receptors expression, and systemic treatment, were associated with recurrence risk. **Conclusion:** Patients with HER2+ stage I breast cancer had an excellent prognosis, with low recurrence rates. These findings align with SEER data, supporting de-escalation strategies. Larger studies are needed to confirm outcomes of subcentimetric tumors not receiving systemic therapy.

Keywords: breast neoplasms; ErbB-2 receptor.

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Prognostic impact of real-world immunohistochemical changes in breast cancer treated with neoadjuvant chemotherapy

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Objective: To evaluate the rate and types of immunohistochemical (IHC) changes after neoadjuvant chemotherapy (NAC) and their influence on disease-free survival and overall survival in breast cancer patients, with a focus on conversions such as hormone receptor-positive and human epidermal growth factor receptor-type 2-negative (HR+/HER-) 2+ to HR-/HER- 2- and their implications for treatment adjustments. **Methods:** This retrospective cohort study included 369 female patients aged 18 years or older with non-metastatic breast cancer treated with NAC between January 2011 and January 2023. Patients who did not achieve complete pathological response were evaluated for changes in IHC profiles, including HR status, HER-2 expression, and Ki-67 index. Prognostic outcomes were assessed using Kaplan-Meier survival analysis and multivariate Cox regression models. This study was approved by the research ethics committee of the Hospital do Servidor Público Estadual (CAAE 80127724.1.0000.5463) through Plataforma Brasil. Due to its retrospective nature, the requirement for informed consent was waived, ensuring the confidentiality and anonymity of patient data through record anonymization. **Results:** IHC changes were observed in 41.7% of patients. Among those initially classified as HR-/HER- 2-, 50.9% gained HR expression, and 14.1% acquired HER-2 expression. In HR+/HER-2+ cases, 70.8% experienced a loss of HER-2 expression. Patients with HER-2+ tumors exhibited more frequent IHC changes compared to HER-2- cases ($p < 0.0001$). After a median follow-up of 47.7 months, local recurrences occurred in 10.3% of patients, distant metastases in 29.5%, and death occurred in 25.5% of patients. Patients with IHC changes demonstrated significantly worse disease-free survival and overall survival ($p = 0.002$), with the poorest outcomes associated with conversion to HR-/HER-2- ($p < 0.001$). **Conclusion:** Post-NAC IHC changes are common and associated with poor prognosis, especially in patients losing HR and HER-2 expression. Monitoring IHC shifts is critical for guiding personalized treatment and improving prognostic evaluation.

Keywords: breast cancer; neoadjuvant chemotherapy; immunohistochemistry; receptors, estrogen; receptors, progesterone; receptor, ErbB-2.

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Progression-free survival as a surrogate endpoint for overall survival in antibody-drug conjugate trials for advanced breast cancer: a systematic review and meta-analysis

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Objective: To evaluate the validity of progression-free survival (PFS) as a surrogate endpoint for overall survival (OS) in randomized controlled trials assessing antibody-drug conjugates in advanced breast cancer. **Methods:** A systematic review and meta-analysis was performed following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. Searches were conducted on PubMed, Embase, and Cochrane databases, including conference proceedings up to February 2024. Linear regression models weighted by trial size assessed trial-level correlation between hazard ratios for PFS and OS. Surrogacy strength was classified based on the coefficient of determination (R^2): strong (≥ 0.7), moderate (0.5–0.69), or weak (< 0.5). **Results:** Fifteen randomized controlled trials involving 7,360 patients were included. Overall, a moderate correlation between PFS and OS was identified ($R^2=0.61$; 95% confidence interval [CI] 0.29–0.94). Subgroup analyses revealed variability, with a notably weak correlation in human epidermal growth factor receptor-type 2 (HER2)-positive breast cancer ($R^2=0.31$; 95%CI 0.00–1.00). Trials with fewer participants (≤ 529) exhibited stronger correlations ($R^2=0.74$; 95%CI 0.35–1.00) compared to larger studies (> 529 participants; $R^2=0.36$; 95%CI 0.00–1.00). The surrogate threshold effect for meaningful OS prediction was identified as a 25% reduction in the hazard ratio for PFS across trials. **Conclusion:** PFS showed moderate surrogacy for OS in antibody-drug conjugate trials for advanced breast cancer, with substantial variation across subgroups. Given the weak correlation in HER2-positive disease, reliance solely on PFS might misrepresent true clinical benefit. OS should remain the primary endpoint in trials evaluating antibody-drug conjugate efficacy.

Keywords: breast cancer; immunoconjugates; meta-analysis.

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Micro ribonucleic acid-21 expression and its association with resistance to neoadjuvant chemotherapy in breast cancer: preliminary results

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Objective: To evaluate the expression of micro ribonucleic acid (miR)-21 in the plasma of breast cancer patients and investigate its potential association with resistance to neoadjuvant chemotherapy. **Methods:** All breast cancer patients with an indication of neoadjuvant chemotherapy and submitted to surgical treatment at the Breast Unit of Hospital de Clinicas de Porto Alegre, Rio Grande do Sul, Brazil, between 2023 and 2024 were selected. Chemotherapy resistance was determined through clinical outcomes (e.g., pathological complete response *vs.* residual disease). Patients were grouped based on their pathological response to chemotherapy: complete response, partial response, or no response. The miR-21 was isolated from patients' plasma collected before chemotherapy. The expression of miR-21 was quantified by quantitative reverse transcription polymerase chain reaction (qRT-PCR). Assessment of the association between miR-21 expression and chemotherapy response was performed with the Student's t-test or analysis of variance (ANOVA). Tumors were classified into high- and low-expressing tumors, based on the median miR-21 expression values. Statistical analysis was performed using IBM Statistical Package for Social Sciences (SPSS), version 18. **Results:** Patients with elevated plasma miR-21 levels were significantly more likely to belong to the no-response group, accounting for 70% of the non-responders. In contrast, lower miR-21 levels were associated with a 2.6 times higher probability of partial response ($p < 0.001$). **Conclusion:** Our preliminary results suggest that miR-21 expression in plasma could serve as a potential biomarker for predicting resistance to neoadjuvant chemotherapy in early breast cancer patients. Further studies are needed to validate these findings and explore the role of miR-21 in chemotherapy resistance.

Keywords: neoadjuvant chemotherapy; breast cancer.

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Immune-related adverse events among patients with early-stage triple-negative breast cancer treated with pembrolizumab plus chemotherapy: real-world data from the Neo-Real/GBECAM-0123 study

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Introduction: Pembrolizumab combined with neoadjuvant chemotherapy is the standard of care for stage II–III triple-negative breast cancer based on the KEYNOTE-522 trial. However, 13% of patients experienced immune-related adverse events (irAEs) of grade ≥ 3 in the trial. **Objective:** This study aimed to describe patterns of irAEs in a real-world scenario during treatment with pembrolizumab for early-stage triple-negative breast cancer. **Methods:** Patients treated with neoadjuvant pembrolizumab plus chemotherapy across ten Brazilian cancer centers were evaluated in the Neo-Real/GBECAM-0123 study. The analysis focused on irAE evaluation, including time to onset, management, and association between irAEs and pathological complete response. Logistic regression analyses were conducted to evaluate possible clinical predictors of irAEs. The irAE-free survival was assessed using the Kaplan-Meier method. **Results:** A total of 368 patients were included. Overall, 31.0% of patients (n=114) presented with any grade irAEs. Most of irAEs (72.8%) occurred during the neoadjuvant phase, while 28.1% happened during the adjuvant period. The most frequent irAEs were endocrine (12.8% of the entire cohort), cutaneous (7.6%), and gastrointestinal (7.1%). Fifty patients (13.6%) experienced grade ≥ 3 irAEs, predominantly gastrointestinal (32.0%). The median duration of irAEs was 29.5 days (range 2–418). Fifty-eight patients (56.0%) needed corticosteroids, and two required additional immunosuppressive therapy. Immunotherapy rechallenge was possible in 54.0% of the cases; permanent discontinuation of pembrolizumab was necessary for 16.0%. No significant association was observed between irAEs and clinic-pathologic features nor pathological complete response status. **Conclusion:** In this real-world analysis, we observed a similar incidence of irAEs as reported in the KEYNOTE-522 trial. Most patients experienced resolution of their irAEs, but some required permanent discontinuation of pembrolizumab. Additionally, there were lasting dysfunctions, particularly endocrine, demanding lifelong support. Careful monitoring and management of these events are essential. Identifying patients who do not require pembrolizumab remains a challenge.

Keywords: triple-negative breast cancer; immunotherapy; drug-related side effects and adverse reactions.

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Grade 1 hormone receptor-positive early breast cancer: is Oncotype DX necessary?

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Introduction: The Oncotype DX (ODX) genomic risk score (RS) is a key tool for guiding adjuvant chemotherapy decisions in early-stage hormone receptor-positive and human epidermal growth factor receptor-type 2-negative (HR+/HER2-), breast cancer. Since some genes assessed in RS tests are linked to proliferation, its utility in low-proliferation tumors, such as histologic grade 1 (G1) or those with low Ki67-index, remains uncertain. **Objective:** This study aimed to evaluate ODX role in G1 tumors. **Methods:** GBECAM-0520, a multicentric real-world data study, assessed ODX's usefulness in G1 HR+/HER2- breast cancer. Conducted across nine Brazilian cancer centers (2009–2024), key endpoints included the prevalence of high genomic RS and invasive disease-free survival. **Results:** Among 1,059 HR+/HER2- breast cancer patients undergoing ODX, 194 had G1 tumors. The median age was 51 years (range 31–72), and 49% were pre-menopausal. Most had non-special type carcinoma (80%) and Ki67 <20% (76%). Tumor stages were 32% T1b, 44% T1c, and 14% T2, while nodal status was 75% N0, 9% N1mic, and 15% N1. Based on the Adjuvant! algorithm, 90% (n=174) had low clinical risk. ODX results showed 22% low, 71% intermediate, and 6% high RS. With a median 51-month follow-up, six patients recurred—five locoregionally and one distantly; one died without recurrence. All recurrences occurred in the intermediate RS group; no events were seen in the high-risk group. Recurrence rates were 3.4% for Ki67 <20% and 4.9% for Ki67 ≥20%. The estimated 5-year invasive disease-free survival rate was 98.4% (95% confidence interval 93.7–99.6). **Conclusion:** For G1 breast cancer with low clinical risk, ODX's utility and cost-effectiveness may be limited. Careful clinical risk assessment is crucial for optimizing genomic RS testing and resource allocation.

Keywords: breast neoplasms; genomics; adjuvant chemotherapy; neoplasm grading.

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Genetic screening of pathogenic variants in relatives of patients with hereditary breast and ovarian cancer in the state of Goiás: tool for early diagnosis and prevention of breast and ovarian cancer in the Goiás Todo Rosa Program

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Introduction: Approximately 10% of breast and ovarian cancer cases are hereditary. Genetic screening of family members of patients with germline pathogenic variants is essential for prevention, early diagnosis, and personalized therapeutic actions. Identifying pathogenic variants allows the screening of family members at risk. This strategy, already incorporated into the Unified Health System (SUS) in Goiás, strengthens public policies and enables prevention and precision oncological care. **Objective:** This study aimed to identify germline pathogenic variants and their prevalence in family members of patients with pathogenic variants. **Methods:** A total of 308 patients who met the National Comprehensive Cancer Network criteria for suspected hereditary breast and ovarian cancer syndromes were evaluated and referred to the Human Genetics Center of the Federal University of Goiás by reference hospitals of the SUS in the state of Goiás. After pre-genetic counseling and application of the free and informed consent form, 4 mL of venous blood were collected for deoxyribonucleic acid (DNA) extraction used for next-generation sequencing with the OncoPrint™ BRCA Expanded panel kit and submitted to sequencing on the Ion Torrent platform. **Results:** Of the 308 patients evaluated, 5.8% (18/308), 1.8% (6/308), and 3.9% (12/308) were positive for some pathogenic variant in the BRCA1, BRCA2, and TP53 genes, respectively. Three families were investigated for the variant in the TP53 gene and two families with a pathogenic variant in the BRCA1 and 2 genes. The variants c.1010 G>A (6/7) and c.455C>T (1/7) were identified. Within the families with variants, it was observed that 47.1% (8/17) of the tested relatives were also positive cases, with one case of cancer followed by death. **Conclusion:** Given these results, genetic screening of relatives of patients with variants in BRCA1 and 2 genes enables prevention, early diagnosis, and personalized approaches, expanding the impact of the healthcare network in Goiás.

Keywords: breast cancer; Li-Fraumeni syndrome; tumor suppressor protein p53; hereditary breast and ovarian cancer syndrome.

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Omission of axillary lymph node dissection in clinically node-negative breast cancer with sentinel node metastasis: a systematic review and meta-analysis of noninferiority randomized clinical trials

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Objective: To evaluate the de-escalation of axillary lymph node dissection (ALND) in clinically node-negative (cN0) breast cancer with sentinel node (SN) metastasis. **Methods:** A systematic review and meta-analysis (CRD420251000419) was conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines and the PICOTS (patient/population, intervention, comparison, outcome, timing, and setting) framework. The databases PubMed, Embase, and Cochrane were searched for randomized clinical trials with ≥5-year follow-up that evaluated ALND omission in cN0 breast cancer with positive SN, assessing overall survival, disease-free survival, locoregional recurrence, or complications. Pooled hazard ratios (HR) and risk ratios (RR) were calculated using R software, with 95% confidence intervals (CI). Substantial heterogeneity was defined as $I^2 > 25\%$. A margin of 1.25 was set to assess non-inferiority (pni). **Results:** Eight randomized clinical trials were included, comprising 7,798 patients (no ALND: 50.6%; ALND: 49.4%). Omitting ALND was non-inferior for overall survival (HR 0.96; 95%CI 0.75–1.23; $I^2=12.9\%$; $p=0.731$; pni=0.0174) and disease-free survival (HR 1.02; 95%CI 0.89–1.16; $I^2=21.6\%$; $p=0.791$; pni=0.0013), but inferior for locoregional recurrence (HR 1.00; 95%CI 0.76–1.32; $I^2=20.6\%$; $p=0.999$; pni=0.0578). Sensitivity analysis showed similar results for 10-year endpoints. Omitting ALND significantly reduced the risk of lymphedema (RR 0.33; 95%CI 0.19–0.59; $I^2=35.9\%$; $p=0.009$). Subgroup analysis showed no significant disease-free survival differences by estrogen receptor status (positive vs. negative; $p=0.1656$), number of metastatic SNs (1 vs. ≥2; $p=0.4632$), tumor size (<2 vs. ≥2 cm; $p=0.8169$), and age (<65 vs. ≥65 years; $p=0.9971$). **Conclusion:** Omitting ALND provides equivalent overall survival and disease-free survival while reducing lymphedema, although non-inferiority in locoregional recurrence was not demonstrated.

Keywords: sentinel lymph node biopsy; breast neoplasms; lymphatic metastasis; meta-analysis.

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A comprehensive meta-analysis and systematic review of same-day discharge protocols following mastectomy with immediate breast reconstruction in surgical oncology

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Objective: This meta-analysis and systematic review aimed to update the evidence on the safety, feasibility, and outcomes of same-day discharge (SDD) after mastectomy with immediate breast reconstruction. Factors influencing SDD were identified by reviewing variables such as age, comorbidities, reconstruction type, and intraoperative and postoperative management. Key outcomes compared SDD and overnight hospitalization, including analysis on complication rates, readmissions, pain control, and patient satisfaction. This study sought to provide evidence on the effectiveness of SDD protocols and their impact on clinical practice, assessing whether SDD can offer a safe, effective alternative to traditional hospitalization for selected patients. **Methods:** The analysis of 61,537 patients across eight studies concluded that SDD after mastectomy with immediate reconstruction did not increase complication, readmission, or reoperation rates. The meta-analysis revealed a moderate and statistically significant effect favoring SDD, with an effect size of 0.193 (95% confidence interval [CI] 0.034–0.352; $p=0.017$). The I^2 statistic of 0% indicated no heterogeneity, reinforcing the robustness of the results. No publication bias was detected. **Results:** Traditionally, patients remain hospitalized for postoperative monitoring, but advancements in anesthesia and surgery have made SDD an increasingly viable option. Studies suggest that SDD is safe and effective, with no significant increase in complications, readmissions, or reoperations compared to overnight stays. Patient selection is crucial, with factors such as comorbidities and reconstruction type influencing outcomes. Proper pain management and follow-up care are essential for success. Standardizing protocols for SDD could help minimize variability in outcomes and ensure consistent patient care. **Conclusion:** The findings of this review suggest that SDD after mastectomy with immediate breast reconstruction is a safe, feasible, and advantageous strategy for selected patients. The implementation of this protocol can optimize hospital resources without compromising patient safety and clinical outcomes. It is possible to anticipate that this approach is a reality.

Keywords: patient discharge; breast reconstruction; mastectomy.

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Identifying predictors of implant loss in immediate breast reconstruction: integrating surgical and dosimetric factors in a large-scale study

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Objective: This study aimed to identify surgical and dosimetric predictors of implant loss and establish safety constraints for patients undergoing immediate implant-based breast reconstruction with postoperative radiotherapy. **Methods:** This retrospective cohort study included 292 patients who underwent immediate implant-based breast reconstruction followed by postoperative radiotherapy between 2010 and 2022. Surgical techniques and radiotherapy protocols were assessed. Radiotherapy dosimetry focused on dose distribution within a 1 cm annular volume around the implant inside the Clinical Target Volume. Statistical analysis included chi-square, log-rank, and multivariate tests. **Results:** All patients received postoperative radiotherapy at 50 Gy in 25 fractions. The implant loss rate was 13%. Univariate analysis showed a significant association between implant loss and postoperative complications, surgical reintervention, and clinical N staging ($p=0.016$). Logistic regression identified postoperative complications (odds ratio [OR] 2.46; $p=0.012$) and surgical reintervention (OR 3.51; $p=0.007$) as independent predictors of implant loss. Among complications, seroma was significant (OR 2.71; $p=0.042$). Anatomical placement significantly impacted loss rates, with 26% failure in prepectoral *vs.* 12% in subpectoral placement (OR 2.46; $p=0.035$). Dosimetric analysis showed correlation between implant loss and prosthesis volume receiving $\geq 108\%$ of the prescribed dose ($p=0.048$) and the 1 cm periprosthetic annular volume receiving $\geq 108\%$ ($p=0.004$). Receiver operating characteristic (ROC) curve analysis identified a threshold of 4.57 cc for V108% in the annular region (area under the ROC curve=0.6459, sensitivity=0.70, specificity=0.57). Spearman's correlation showed a strong positive correlation between V108% in the prosthesis and the annular region ($\rho=0.682$). **Conclusion:** Postoperative complications, surgical reintervention, and implant anatomical placement were independent predictors of implant failure. Dosimetric analysis showed that a V108% in the periprosthetic ring exceeding 4.57 cc increased the risk of implant loss, suggesting this as a valuable dosimetric constraint. These findings support more effective and safer treatment strategies, potentially transforming clinical practice.

Keywords: breast reconstruction; breast implants; radiotherapy, adjuvant.

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Osteoradionecrosis/osteomyelitis of the chest wall associated with radiotherapy for breast cancer

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Introduction: Osteoradionecrosis is an uncommon entity associated with breast cancer, with decreasing incidence. It can present as a local inflammatory process, skin ulceration, and bone changes, and may be associated with osteomyelitis. Clinical treatment usually involves a surgical procedure. **Objective:** To evaluate the factors associated with the diagnosis and potential surgical treatments performed in patients with suspected osteoradionecrosis/osteomyelitis of the costal arches after breast cancer treatment. **Methods:** This was a systematic review of literature based on the PICOS (patient/population, intervention, comparison, outcome, study design) and the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) methodologies, carried out on two databases (PubMed and LILACS), using the descriptors: breast neoplasms and osteoradionecrosis or osteomyelitis. All cases treated in a tertiary oncology hospital over a 5-year period were evaluated. The study was approved by the research ethics committee (CAAE 81761124.9.0000.5105). **Results:** Of the 125 articles evaluated, 22 were included in the study. In the differential diagnosis of osteomyelitis, thoracic magnetic resonance imaging and triphasic scintigraphy are the main exams to be performed. In general, clinical treatment does not control the lesion, requiring debridement (with or without rib resection), which is associated with the use of flaps, with myocutaneous flaps being the most commonly used. In the service, two patients were treated, representing 0.07% of the cases treated, one of whom had previously undergone breast-conservative treatment. One patient was submitted to resection of the chest wall, and the two cases underwent reconstruction with latissimus dorsi flap. **Conclusion:** In the presence of ulceration/osteoradionecrosis, a careful evaluation should be performed to rule out the presence of osteomyelitis. Clinical treatment is generally not effective. Surgical debridement with resection of the affected area, antibiotic therapy, and use of myocutaneous flaps are good options for early recovery and local control.

Keywords: breast neoplasms; osteoradionecrosis; osteomyelitis; surgical flaps; chest wall.

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Breast cancer screening indicators in users of the Unified Health System after the implementation of the Itaberaí Project

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Objective: To evaluate the mammographic screening indicators in the Unified Health System of users residing in the municipality of Itaberaí, Goiás, and to compare the coverage before and after three years of the implementation of the Itaberaí Project. **Methods:** Data were collected from the records of the Regulation Sector and the Mammography Service of the municipality. Indicators were evaluated regarding clinical indication, age group, interval between the exam request and the report release, and the results of the exams according to the Breast Imaging Reporting and Data System (BI-RADS®) classification. **Results:** In 2021, 359 mammograms were performed, with an estimated coverage of 4.3%. In 2022, 770 were performed (10%), in 2023, 951 (12.7%), and in 2024, 2,217 mammograms were performed, showing a statistically significant increase of 29.6% ($p < 0.05$). Indicators for 1,339 (60%) of the exams performed in 2024 were calculated. Regarding clinical indications, 86.5% were prescribed for screening, and 13.5% for diagnostic purposes. The average age was 50 years, with the highest prevalence in the 50–69 age group (54.1%), followed by the 40–49 age group (33.8%). Among the screening mammograms, the BI-RADS®0 rate was 17.5%, BI-RADS®1 was 7.0%, BI-RADS®2 was 74.2%, BI-RADS®3 was 0.22%, BI-RADS®4 was 0.5%, and BI-RADS®5 was 0.07%. For the total number of mammograms, the average time between the request and the report issuance was 19 days, with a median of 13 days, and in 42.1% of the exams, the time was up to 10 days. Of the exams performed, 13.8% were available to women in the mammography service. **Conclusion:** There was a significant increase in mammographic coverage for women after the implementation of the Itaberaí Project. It was observed that the time between the request and the report needed to be improved as a quality measure. Strategies are needed to ensure that women seek their exam in the mammography service.

Keywords: breast cancer; screening; mammography; health status indicators.

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Adherence to endocrine therapy and sexual dysfunction in patients older than sixty-five years with early estrogen receptor-positive breast cancer

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Introduction: Studies of adjuvant endocrine therapy (ET) for early-stage estrogen receptor-positive breast cancer have a suboptimal number of patients older than 65 years included. **Objective:** This study aimed to evaluate adherence to adjuvant ET, quality of life and sexual dysfunction in women >65 years with early breast cancer. **Methods:** Women with early-stage estrogen receptor-positive breast cancer on adjuvant ET for at least six months were invited to participate of this study. Patients were stratified according to age ≤ 65 and >65 years. Adherence was assessed with Morisky Medication Adherence Scale (MMAS-8). Quality of life was assessed using EORTC QLQ C30 and BR-23 forms. Sexuality was assessed with the Female Sex Function Index Questionnaire. **Results:** From June 2021 to March 2024, 774 women from 14 Brazilian institutions were recruited. Mean age was 62 years, mean tumor size was 2.24 cm, and mean duration of ET was 3.2 years. About 191 patients (24.7%) were >65 years, 69.6% of them were highly adherent to ET, and 70.7% had sexual dysfunction. In comparison with women ≤ 65 years, older women were associated with private healthcare insurance ($p=0.003$), lived with no partner ($p<0.0001$), had lower level of education ($p=0.0009$), had prior lumpectomy ($p=0.0017$), prior sentinel node biopsy ($p=0.03$), had no prior chemotherapy ($p<0.0001$), used aromatase inhibitors ($p<0.0001$), and were also more associated with higher adherence ($p=0.0009$). There was no difference in sexual dysfunction between the groups. Patients >65 years had higher quality of life scores for emotional, cognitive, and social functioning, body image, and future perspective. **Conclusion:** Patients older than 65 years had less aggressive treatments, better domains in quality of life, and higher adherence to ET than patients aged up to 65 years. In this context, sexual dysfunction affects women of both age groups.

Keywords: breast cancer; GnRH; aromatase inhibitor; aging; sexuality.

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Accuracy of multidetector computed tomography with a dedicated protocol in the locoregional staging of breast cancer

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Objective: To evaluate the accuracy of multidetector computed tomography (MDCT) with a dedicated protocol for locoregional breast cancer staging. **Methods:** This was a retrospective, single-center study that included female patients diagnosed with breast cancer who underwent contrast-enhanced MDCT for staging purposes. Patients who underwent neoadjuvant chemotherapy were excluded. Some scans were performed using a conventional protocol, with patients in the supine position. In contrast, others were performed using a dedicated protocol in the prone position. MDCT results were compared to surgical pathology findings (gold standard). **Results:** A total of 95 patients were included, with a mean age of 54 years (32–85). Most tumors were of no special type (66.3%) and luminal (86.3%). The majority of patients underwent breast-conserving surgery (58.9%) and sentinel lymph node biopsy (84.2%). Of the CT scans, 47 (49.5%) were performed in the supine position and 48 (50.5%) in the prone position, using the dedicated breast evaluation protocol. The primary tumor was detected on CT in 85 patients (89.5%), occurring more frequently in prone-position scans (93.8%) than in supine-position scans (85.1%). Tumors most commonly appeared as masses on CT (68.4%) or masses associated with non-mass enhancement areas (11.6%). Tumor size assessed on prone-position CT showed a stronger correlation with the tumor size in the surgical specimen ($r=0.662$; $p<0.001$) compared to the supine position ($r=0.176$; $p=0.298$). Prone-position CT showed a significant association with pathological analysis for the detection of multifocality/multicentricity (accuracy of 73%; $p=0.032$) and the presence of metastatic axillary lymph nodes (accuracy of 75%; $p=0.003$), while supine-position CT did not show a significant association. **Conclusion:** MDCT with a dedicated protocol is a feasible method for evaluating breast lesions and axillary lymph nodes and can provide additional information for locoregional staging, especially in settings where breast magnetic resonance imaging is not routinely performed.

Keywords: breast cancer; neoplasm staging; multidetector computed tomography.

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Vacuum-assisted biopsy in the era of low-risk ductal carcinoma in situ active monitoring: real world data and implications

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Objective: This study aimed to evaluate vacuum-assisted biopsy (VAB) as a diagnostic test for detecting low-risk ductal carcinoma in situ (LR-DCIS) under active surveillance in real-world clinical practice. **Methods:** A database analysis was conducted on 116 cancers—both invasive breast cancer and ductal carcinoma in situ—diagnosed by VAB and subsequently submitted to standard surgical treatment, with complete histological data from VAB and surgery, between April 13, 2017 and November 28, 2020. The VAB results were matched to the surgical pathology, considered the gold standard. The pathological diagnoses were grouped into malignancies requiring guideline surgical treatment [DCIS with high risk (HR-DCIS) of invasive breast cancer or progression to invasive breast cancer] versus those eligible for alternative active surveillance (LR-DCIS). HR-DCIS invasive breast cancer was considered positive, while LR-DCIS was considered negative. VAB sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy were obtained. **Results:** The mean age was 55.6 (standard deviation ± 12.3) years; mean invasive breast cancer size was 7.14 (± 5.17) mm, and 12.60 (± 11.63) mm for DCIS; 65.52% was ultrasound guided (70/116) and 44.48% (46/116) was stereotactic guided; 42.24% (49/116) presented masses, 26.72% (31/116) masses associated with calcifications, and 31.03% (36/116) had calcifications. Out of the 116 malignancies diagnosed by VAB, 15 (12.9%) resulted in LR-DCIS in the biopsy, 10 (8.6%) confirmed LR-DCIS in surgery, and 5 (4.3%) upgraded to HR-DCIS invasive breast cancer in surgery. VAB showed 95.28% sensitivity, 100% specificity, 100% PPV, and 66.67% NPV. **Conclusion:** VAB LR-DCIS active monitoring would lead to a moderate overall reduction of short-term breast cancer surgical overtreatment in real world clinical practice.

Keywords: breast cancer; biopsy; DCIS.

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Human epidermal growth factor receptor-type 2 status and tumor heterogeneity in invasive breast carcinomas: clinical pathological impact

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Objective: To assess the human epidermal growth factor receptor-type 2 (HER2) expression spectrum in primary invasive breast carcinoma, focusing on its heterogeneity and correlation with pathological factors, given its impact on prognosis and therapy resistance. **Methods:** A retrospective study reanalyzed HER2 immunohistochemistry slides from patients with primary invasive breast carcinoma diagnosed and treated at the São Paulo Federal University Hospital, from 2019 to 2023. Clinical data, including age, laterality, tumor size, and Breast Imaging Reporting and Data System (BI-RADS), were collected. The HER2 slides were reviewed by three observers, following the ASCO-CAP 2018 guidelines. Statistical analysis was performed using IBM Statistical Package for Social Sciences (SPSS), version 26.0. **Results:** The study included 353 patients, with a mean age of 58 years. Of those, 191 (54.1%) cases were left-sided and 162 (45.9%) were right-sided. BI-RADS categories 4 and 5 were the most common. Among 164 patients with follow-up, 14 deaths occurred. Pathologically, 304 (86.1%) cases were of no special type, and 26 (7.4%) were of invasive lobular carcinomas. HER2 status showed 296 (83.9%) negative, 42 (11.9%) positive, and 15 (4.2%) HER2 2+. Regarding negative cases, 235 were HER2 0+ and 61 were HER2 1+. HER2 intratumoral heterogeneity was present in 66 cases (18.7%), with 34 (51.5%) showing 1+ as the primary score. HER2 positivity and intratumoral heterogeneity were associated with higher mortality ($p=0.003$ and $p=0.001$, respectively). HER2-positive tumors were larger than HER2-negative ones (31.3 vs. 25.6 mm; $p=0.012$), while intratumoral heterogeneity did not correlate with tumor size ($p=0.165$). **Conclusion:** We conclude that intratumoral heterogeneity is prevalent in HER2 expression and should be addressed in pathology reports, since it may play an additional role in tumor progression and drug response, especially in the antibody-drug conjugates scenario.

Keywords: breast neoplasms; ErbB-2 receptor.

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Extreme oncoplasty: equivalent to other types of partial and total breast reconstruction

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Objective: This study aimed to compare extreme oncoplasty (partial breast reconstruction for tumors >5 cm or multicentric lesions) with standard oncoplasty for unicentric T1/T2 tumors, and extreme reconstruction (total breast reconstruction for tumors >5 cm or multicentric lesions) with standard reconstruction (total reconstruction for unicentric T1/T2 tumors). **Methods:** This retrospective cohort study included 917 women with breast cancer or phyllodes tumors who underwent partial or total breast reconstruction at least six months post-surgery and radiotherapy, between March 2004 and April 2024. Clinical parameters, complications, surgical techniques, local recurrence rates, and survival were evaluated from medical records. Aesthetic outcomes were assessed prospectively using the Harvard scale, Breast-Q questionnaire, and BCCT.core software after informed consent. The study was approved by ethics committee, and data were analyzed with the IBM Statistical Package for Social Sciences (SPSS) software. **Results:** Among patients with extreme lesions, 138 (42.2%) underwent oncoplasty, compared to 386 (65.4%) in the standard group. Invasive ductal carcinoma was the most common histology (76.3%), and 8.1% had multicentric tumors. The extreme oncoplasty group required more frequent axillary clearance, neoadjuvant chemotherapy, and more complex surgical techniques than the standard oncoplasty group. Complication rates in extreme oncoplasty were similar to those in standard oncoplasty and significantly lower than in the extreme reconstruction group. Intraoperative margin evaluation was more common in extreme oncoplasty (54.7%), with similar rates of positive or close margins across groups. Mean follow-up was 81.6 months. Reconstruction procedures were fewer in the conservative groups than in the mastectomy groups. Local recurrence and overall survival rates were similar across all groups. Patients in conservative groups reported higher satisfaction with aesthetic outcomes and quality of life compared to mastectomy with reconstruction. **Conclusion:** Extreme oncoplasty is a feasible and safe option for selected patients with locally advanced or multicentric breast cancer, offering superior aesthetic outcomes, higher patients' satisfaction, and lower complication rates than total breast reconstruction with similar oncologic results.

Keywords: mastectomy; mammaplasty; breast cancer; quality of life; survival rate.

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Diagnostic accuracy of magnetic resonance imaging for predicting pathological complete response in triple-negative breast cancer treated with neoadjuvant chemotherapy and immunotherapy

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Objective: This study aimed to assess the diagnostic performance of preoperative magnetic resonance imaging (MRI) in predicting pathological complete response (pCR) for patients with triple-negative breast cancer undergoing neoadjuvant chemotherapy (NAC) with immunotherapy. **Methods:** This retrospective, single-center, and Institutional Review Board-approved study included female patients diagnosed with triple-negative no special type invasive breast carcinoma, eligible for NAC and immunotherapy, from February 2022 to January 2024. **Results:** Fifty-two patients were included, with a mean age of 46.1 years and a mean tumor size of 39 mm. Regarding treatment response, a high radiological complete response (rCR) rate was observed (84.6%). Among those with rCR, the majority showed a pCR on histopathological evaluation (33 patients; 84.6%), while 5.1% were classified as residual cancer burden (RCB) I and 10.3% as RCB II. Among patients who had only a partial radiological response, 15.3% achieved pCR, 30.8% were classified as RCB I, 46.2% as RCB II, and 7.7% as RCB III (the highest classification) after neoadjuvant treatment. MRI sensitivity for predicting pCR was 94.3%, specificity was 64.7%, positive predictive value was 84.6%, and negative predictive value was 84.6%. MRI accuracy for predicting pCR was 84.6%. During the one-year follow-up, distant metastases occurred in three patients: two rCR (RCB 0 and RCB II) and one partial radiological response (RCB II). One patient died during follow-up, and no cases of locoregional recurrence were documented. **Conclusion:** Our results show that MRI has excellent diagnostic performance in predicting pCR in patients with triple-negative breast cancer treated with NAC associated with immunotherapy.

Keywords: breast cancer; magnetic resonance imaging; neoadjuvant chemotherapy; immunotherapy; pathologic complete response.

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Cost-effectiveness analysis and budget impact analysis of next-generation sequencing panel including BRCA1 and BRCA2 genes for women diagnosed with non-metastatic breast cancer in Brazil

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Objective: This study aimed to estimate both the cost-effectiveness and budget impact of using next-generation sequencing panels with genetic counselling to detect BRCA1/2 mutations in women diagnosed with non-metastatic breast cancer and compare to no genetic testing, from the perspective of the Brazilian Public Health System. **Methods:** A hybrid economic model (decision tree plus Markov model) simulated costs and outcomes over a 10-year horizon of next-generation sequencing panels with genetic counselling to identify BRCA1/2 pathogenic variants in women diagnosed with non-metastatic breast cancer. The eligible population was estimated using the epidemiological method with national data identified in the literature. We estimated both the incremental cost-effectiveness ratio per quality-adjusted life year (QALY) gained and the budget impact of adding next-generation sequencing panels plus genetic counselling to identify pathogenic variants in BRCA1/2 in women diagnosed with non-metastatic breast cancer. **Results:** Genetic testing for BRCA1/2 mutations combined with genetic counselling showed an incremental benefit of 0.044 QALYs gained at an additional cost of R\$ 3.314,83 compared to no genetic testing and genetic counselling, resulting in an incremental cost-effectiveness ratio of R\$ 75.961,11 per QALY gained. Considering the expected number of women, the cumulative budget impact over five years with the availability of genetic testing for BRCA1/2 and genetic counselling would be R\$ 31.104.761,08, based on the current scenario (without BRCA1/2 test and genetic counselling). **Conclusion:** Genetic testing for BRCA1/2 mutations combined with genetic counselling was cost-effective from the Brazilian Public Health System perspective, with an incremental cost-effectiveness ratio value below the established willingness-to-pay threshold of R\$ 120,000.00/QALY.

Keywords: breast cancer; BRCA1 protein; BRCA2 protein; cost-effectiveness analysis; analysis of the budgetary impact of therapeutic advances.

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Immunoexpression of markers related to the human epidermal growth factor receptor-type 2 (HER2) pathway in cases of pure positive HER2 breast carcinoma treated with trastuzumab

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Objective: To evaluate the immunoexpression of possible markers involved in the human epidermal growth factor receptor-type 2 (HER2) pathway in breast carcinoma with pure HER2 overexpressing treated with trastuzumab. **Methods:** This study analyzed 90 patients diagnosed with pure HER2-positive breast carcinoma treated with trastuzumab at the Brazilian Institute for Cancer Control (IBCC) and the São Paulo Hospital from the Federal University of São Paulo (HSP/Unifesp) between 2009 and 2018. Immunohistochemistry assessed HER2 pathway markers (MUC4, IGF-1, IGF-1R, EGFR, p21, p27, p53, p16, cyclin D1, PTEN, CDK4, Bcl-2, VEGF, AR, MDM2, and TNF α) in paraffin-embedded tumor and compromised lymph node samples, correlating them with clinicopathological variables. Statistical analyses were performed using the IBM Statistics Package for Social Sciences (SPSS), version 25, with p-values ≤ 0.05 considered significant. Associations were verified through Pearson's χ^2 and Fisher's exact tests, while survival analysis used the Kaplan-Meier. **Results:** Resistance to trastuzumab occurred in 40% of cases; overall survival was 4.13 years (95% confidence interval [CI] 5.1–12.5), and disease-free survival was 3.6 years (95%CI 5.1–13.1). In tumor samples, cyclin D1 correlated with nuclear grade (p=0.049) and recurrence (p=0.038); IGF-1 with tumor size (p=0.015) and death (p=0.046); and p16 (p=0.016) and PTEN (p=0.050) correlated with treatment response. Poor prognosis markers included p53 with histological grade (p=0.003) and nuclear grade (p=0.048), and IGF-1R with lymph node involvement (p=0.016). In lymph nodes, TNF α (p=0.043) and CDK4 (p=0.011) correlated with good prognosis, while p53 (p=0.045) remained a poor prognosis marker. **Conclusion:** Cyclin D1, IGF-1, p16, and PTEN showed potential as good prognosis markers, while p53 and IGF-1R were associated with worse outcomes. In lymph nodes, TNF α and CDK4 were favorable markers, whereas p53 retained its poor prognosis role.

Keywords: breast cancer; receptor, ErbB-2; trastuzumab; immunohistochemistry.

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Clinical image quality evaluation of mammography for breast cancer screening

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Objective: To evaluate mammographic image quality in a real clinical practice scenario for breast cancer screening.

Methods: This was an observational, prospective study that analyzed images from digital mammograms from diagnostic services in the state of Goiás in 2019. A specific protocol was created based on the evaluation criteria of the Brazilian College of Radiology, the European Guidelines, and the American College of Radiology. For each variable score, one was attributed to conformity, and zero to nonconformity. Logistic regression model was utilized and the following independent variables were considered: location (city *vs.* country); the Brazilian Unified Health System (SUS) (public *vs.* private); number of monthly exams (≤ 300 *vs.* > 300); device manufacturing year (≤ 2011 *vs.* > 2011); and breast density ($\leq 75\%$ *vs.* $> 75\%$ of the parenchyma). **Results:** Of 163 fully functioning mammograms, 151 (92.6%) were eligible, with 53 (32.5%) equipment participating in the research, which produced a total of 1,024 images. In the clinical image analysis, regarding the positioning of the patient, it was observed the higher conformity for symmetry parameters, in both projections ($> 90\%$). The conformity rate amongst the other parameters varied from 18.6% to 100%. In the multivariable analysis, it was observed that only the variable monthly exams (odds ratio [OR] 3.44; 95% confidence interval [CI] 1.67–7.09; $p=0.0008$) and mammogram device manufacturing year (OR 2.46; 1.02–5.95; $p=0.04$) were associated with a higher conformity rate. After the percentage consolidation conformity rate per diagnostic service, regarding the final clinical mammography quality, no diagnostic service presented desirable conformity ($> 90\%$), 28 obtained acceptable conformity (between 70 and 89%), and 25 presented conformity below 70%. **Conclusion:** Conformity rate of mammographic exams is extremely low and varies accordingly to the multiple parameters analyzed. Mammographies performed at centers with less productivity (≤ 300 /month) and with newer devices (> 2011) presented higher chances of conformity at the clinical imaging evaluation.

Keywords: screening; mammography; quality of health care.

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Neutrophil-to-lymphocyte ratio predicts long-term survival in early triple-negative breast cancer treated with neoadjuvant chemotherapy

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Objective: To evaluate the role of neutrophil-to-lymphocyte ratio (NLR) in predicting survival after neoadjuvant chemotherapy. **Methods:** This retrospective review analyzed data from medical records of 692 patients who underwent neoadjuvant chemotherapy for early-stage TNBC (II–III), from 2012 to 2024. NLR was calculated from the complete blood count before neoadjuvant chemotherapy initiation, and the cut-off point used was 2. Event-free survival and overall survival were estimated with the Kaplan-Meier method, and Cox regression model was employed to calculate the hazard ratios (HR). Logistic regression was used to verify the association between NLR and pathological complete response (pCR). **Results:** The overall pCR rate was 28.3%, and patients with $NLR \leq 2$ had an increased probability of achieving pCR (33% vs. 22.7%; $p=0.002$). After a median follow-up of 59.6 months, $NLR \leq 2$ was associated with improved 5-year event-free survival in the overall population (51% vs. 66%; HR 0.59; $p<0.001$), in patients with stage II disease (69% vs. 81%; HR 0.49; $p=0.010$), stage III (43% vs. 55%; HR 0.70; $p=0.010$), and residual disease (42% vs. 54%; HR 0.65; $p=0.001$). Overall survival of 5 years was also improved in the overall population with $NLR \leq 2$ (58% vs. 73%; HR 0.56; $p<0.010$), stage II disease (75% vs. 86%; HR 0.42; $p=0.009$), stage III disease (50% vs. 62%; HR 0.68; $p=0.015$), and in patients with residual disease (50% vs. 64%; HR 0.62; $p=0.001$). In multivariate analysis, including pCR status and clinical stage, $NLR \leq 2$ remained statistically significant for improved overall survival ($p=0.002$) and event-free survival ($p=0.002$). **Conclusion:** $NLR > 2$ is an independent risk factor for poorer survival in patients with TNBC who received neoadjuvant chemotherapy.

Keywords: triple-negative breast neoplasms; biomarkers; neoadjuvant therapy.

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Co-segregation analysis of the XAF1-E134* variant in patients with pathogenic variants in the TP53 gene: its relationship with the clinic

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Introduction: Variant co-segregation refers to a genetic inheritance pattern in which alterations in different genes are transmitted simultaneously through generations with high frequency. In this context, the co-segregation of the XAF1-E134 and TP53-R337H variants was recently reported in the literature as a likely factor associated with increased aggressiveness of the tumor phenotype, in addition to being associated with clinical heterogeneity. **Objective:** The aim of this study was to identify the XAF1-E134 variant associated with a more aggressive cancer phenotype of Li-Fraumeni Syndrome. **Methods:** All patients treated at the Human Genetics Center of the Federal University of Goiás (CEGH-UFG) since 2022, who underwent genetic sequencing for TP53 gene analysis, were included in the present investigation. To date, of the 348 general patients, 30 were found who presented pathogenic variants associated with TP53, specifically c.455C>T and c.1010G>A. Of these positive cases, 11 corresponded to primary patients and 19 to family members who were previously screened due to kinship with the diagnosed individuals. **Results:** Of the 30 samples with identified variants, 18 were submitted to quantitative polymerase chain reaction (qPCR) for validation and additional analysis. Among them, 14 cases presented positive results, distributed in seven different families. These findings highlight the importance of family genetic screening and the use of complementary methodologies, such as qPCR, to deepen the molecular characterization of TP53 variants and their correlation with cancer predisposition. **Conclusion:** A high prevalence of the XAF1-E134 variant associated with the TP53 gene was observed. Given the relevance of these variants and their clinical implications in the aggressiveness and heterogeneity of hereditary cancer in Brazil, it is essential to develop research in this area, aiming to expand scientific knowledge and contribute to the advancement of personalized clinical treatment and prevention strategies.

Keywords: hereditary breast and ovarian cancer syndrome; breast cancer.

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Assisted breast reconstruction with a biosynthetic mesh and implants: a pilot study

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Introduction: Acellular dermal matrix has been widely employed in implant-based breast reconstruction; however, its application is associated with elevated complication rates. An absorbable biosynthetic mesh (GORE® BIO-A®) may theoretically exhibit lower complication rates while potentially providing functional characteristics similar to acellular dermal matrices. Nevertheless, there is a paucity of literature data regarding this material. **Objective:** To evaluate whether the use of this matrix presents fewer complications than conventional ones in breast reconstruction with prosthesis. **Methods:** A retrospective analysis was conducted on high-risk patients undergoing implant-assisted reconstruction with the biosynthetic matrix. Immediate complications, aesthetic outcomes, and capsular contracture were evaluated. BCCT.core and the Harvard scale were used to assess aesthetic outcome. Quality of life was evaluated using the EORTC QLQ-BRECON23. **Results:** Thirteen patients with 23 breasts were examined. The mean follow-up was 15.6 months (range: 3–44), and the mean age was 41.8 years (range: 31–56). Two patients presented with comorbidities (diabetes, hypertension, or obesity). The mean implant volume was 383cc (range: 330–490), with all cases being direct-to-implant except for one; 11 breasts were prepectoral. Ten breasts underwent radiotherapy. Six breasts exhibited complications: two from surgical wound dehiscence, two nipple necrosis, one infection, and one hematoma, all managed conservatively. No implant loss occurred. Regarding capsular contracture, 18 were grade I, one was grade II, and four were grade III. Among the ten breasts that underwent radiotherapy, four presented with grade III contracture ($p=0.13$). Based on the Harvard scale and BCCT.core, the results were deemed good/excellent in 20/23 breasts and in 9/13 cases, respectively. Evaluating quality of life (median), we observed high satisfaction with the surgery (100.0%), the breast (77.8%), and nipple preservation (100.0%), with low site-effects symptoms. **Conclusion:** This pilot study demonstrates that breast reconstruction assisted by an absorbable biosynthetic matrix may be feasible and associated with potentially low complication rates and high quality of life. Despite these promising perspectives, further case-control studies are necessary to corroborate these results.

Keywords: surgical mesh; breast implantation; mammoplasty; mastectomy; subcutaneous mastectomy; cosmetics; quality of life.

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Characteristics and outcomes of patients with triple-negative breast cancer treated with neoadjuvant chemotherapy according to race

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Objective: To evaluate the differences in characteristics and outcomes of patients with triple-negative breast cancer (TNBC) treated with neoadjuvant chemotherapy according to race in a Brazilian cohort. **Methods:** This study retrospectively reviewed data regarding ethnicity, socioeconomic features, tumor characteristics, and type of treatment from medical records of patients who underwent neoadjuvant chemotherapy for TNBC from 2012 to 2024. Patients were classified in categories, mostly by heteroidentification registers at hospital admission: “white”, “black”, (“mixed or brown” were categorized as “black”) or “others or unknown”. Survival was estimated based on the Kaplan-Meier method, and differences were assessed by the log-rank test and stratified by grade (1–2 vs. 3). Cox regression model was used to calculate the hazard ratio (HR). Chi-square (χ^2) test was used to compare categorical variables. **Results:** Of 737 patients, 41.4% were black. There was no significant difference between groups regarding median age, marital status, as well as clinical stage and histological type. However, there was a difference in histological grade, with a higher proportion of black patients with grade 2 disease (39.0% vs. 30.8%; $p=0.03$). A significant statistical difference was found in the start time of treatment, being greater in the black population (2.3 months vs. 2.0 months; $p=0.03$). There were no significant differences in chemotherapy regimen, type of surgery performed, and pathological complete response rate. With a median follow-up of 61 months, the white population had worse 5-year event-free survival (65.5% vs. 56.6%; HR 1.34; stratified $p=0.02$) and worse 5-year overall survival (72.9% vs. 63.2%; HR 1.3; stratified $p=0.06$) than the black population. **Conclusion:** Black women had better event-free survival and overall survival than white women with early TNBC. This may have been influenced by different tumor biology, since fewer black patients had grade 3 tumors.

Keywords: triple-negative breast neoplasms; race.

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Clinical characteristics related to long-term survival in durable responders with human epidermal growth factor receptor-type 2 metastatic breast cancer: a systematic review

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Objective: The aim of this study was to identify the characteristics of durable responders and compare them with other metastatic breast cancer profiles. **Methods:** This was a systematic literature review using databases such as PubMed, Embase, and Web of Science, in which 12 articles were selected for analysis. This study analyzed 9,474 patients, of whom 2,213 had a survival of 3–10 years (long survival) and 7,261 had a poor prognosis. **Results:** Among the survivors, 28.39% had de novo metastasis at diagnosis, in contrast to 71.6% in the group with the worst prognosis. Visceral metastases were more common in the control group (48.76%) and in the survivor group (46.05%), while nodal metastases were more prevalent in the survivor group (13.25%) and in the control group (11.60%). Single metastases were more prevalent in the survivors (61.81%) than in the controls (51.94%). Tumor resection was performed in 42.31% of survivors, compared to 14.90% in the group with the worst prognosis. **Conclusion:** It is concluded that patients with long-surviving HER2-positive metastatic breast cancer have distinct clinical characteristics, such as a lower incidence of multiple metastases and a higher prevalence of nodal metastases, as well as better outcomes related to primary tumor surgery.

Keywords: breast neoplasms; survival; systematic review.

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Are dietary glycemic index and load associated with breast cancer?

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Objective: To investigate the association between dietary glycemic index and glycemic load with breast cancer, considering menopausal status, in women from Central-West, Brazil. **Methods:** This was a case-control study with non-metastatic breast cancer women and controls (1:2), matched by age (± 5 years), body mass index (± 5 kg/m²), and menopausal status (pre- and post-menopause). The study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist. Body composition was measured by dual-energy X-ray absorptiometry (DXA) method, the food intake by three 24-hour dietary recalls, and the food quality was analyzed by the NDR-S[®]. Fasting blood glucose and insulin blood tests were measured after 12-hours of fasting. Multivariate logistic regression was used to estimate the adjusted odds ratio (OR_{adj}) between glycemic index, glycemic load, and breast cancer. The multivariate model was defined using directed acyclic graphs. Values of $p < 0.05$ were considered statistically significant. **Results:** A total of 334 women participated in the study; most of them were pre-menopausal (58.0%). The mean age was similar between the groups (51.2 years ± 11.5 case vs. 51.3 years ± 10.8 control). Women in the control group had higher education and income than the case group ($p < 0.001$). Body composition, serum glycemic profile, and behavioral variables did not differ between groups and menopausal status. The mean consumption of saturated ($p = 0.026$) and monounsaturated ($p = 0.048$) fat was higher in the control group than in the case group for the total sample, and a higher consumption of protein ($p = 0.043$), cholesterol ($p = 0.002$), and saturated fat ($p = 0.018$) was observed in controls only in the post-menopausal group. In the logistic regression, only income was associated with the outcomes. While lower income, there were greater chances of developing breast cancer (OR_{adj} 1.20; 95% confidence interval [CI] 1.00–1.50; $p < 0.001$). The exposure variables were not associated with the outcomes (glycemic index OR_{adj} 1.00; 95%CI 1.00–1.00; glycemic load OR_{adj} 1.02; 95%CI 0.99–1.04). **Conclusion:** Dietary glycemic index and load were not associated with the development of breast cancer in this population.

Keywords: breast neoplasms; diet; food consumption; body composition.

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Computed tomography in the locoregional staging of breast cancer: interobserver agreement and comparison with conventional imaging

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Objective: To compare the findings of chest computed tomography (CT) for locoregional staging in breast cancer patients with those of other imaging modalities (mammography, ultrasound, and breast magnetic resonance imaging) and with the final histopathological results (gold standard). **Methods:** This was a retrospective, single-center study, including 146 patients with breast carcinoma who underwent contrast-enhanced chest CT for staging. A targeted assessment of the breast was performed on the CT images by four radiologists with different areas of expertise (two breast radiologists, one thoracic radiologist, and one oncologic radiologist), followed by a consensus evaluation. Accuracy (Ac) and the Kappa coefficient (k) were used to assess interobserver agreement and agreement between the CT consensus evaluation and other imaging findings and histopathology. **Results:** The mean patient age was 52 (range 30–85) years. Most tumors were invasive carcinomas of no special type (78.8%) and luminal subtype (76.7%). Dense breasts were observed in 65.1% of patients. The primary tumor was identified on CT in 99.3% of cases. Interobserver agreement ranged from moderate to substantial (k: 0.4–0.7). In the consensus evaluation, 79.5% of lesions were nodular, 13.0% non-nodular enhancements, and 6.8% both (Ac: 86.8%; k: 0.6). Multifocality or multicentricity was identified in 28.8% (Ac: 81.9%; k: 0.6). Signs of skin (6.1%), nipple (4.8%), and pectoral muscle involvement (4.1%) were also observed with reasonable accuracy. Tumor staging was consistent (T1–T4; Ac: 70.5%; k: 0.5). Suspicious contralateral lesions (3.4%) and axillary lymph nodes (44.5%; Ac: 89.0%; k: 0.8) were also detected. **Conclusion:** Chest CT with targeted breast evaluation demonstrated good interobserver agreement and concordance with standard imaging, supporting its potential utility for locoregional staging without requiring additional contrast or radiation exposure.

Keywords: breast cancer; neoplasm staging.

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Human epidermal growth factor receptor-type 2 expression heterogeneity pattern in invasive breast carcinomas: frequency, distribution and relation to morphological variables

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Objective: To evaluate the spectrum of human epidermal growth factor receptor-type 2 (HER2) expression in primary invasive breast carcinomas, considering its heterogeneity and its relationship with morphological variables. **Methods:** This retrospective study analyzed HER2 expression and heterogeneity in invasive breast carcinoma cases from the São Paulo Federal University Hospital, between 2019 and 2023. Three observers evaluated the HER2 slides following the ASCO-CAP 2018 guidelines. Pathological variables were collected, and statistical analyses were performed using the IBM Statistical Package for Social Sciences (SPSS), version 26.0. **Results:** This study included 353 cases, with 29.5% under 50 years and 70.5% over 50. Left-sided tumors accounted for 54.1%. Invasive carcinoma of no special type was most common (91.8%), followed by invasive lobular carcinoma (7.4%). HER2 was negative in 83.9% and positive in 11.9%, with 4.2% classified as HER2 2+. Homogeneous HER2 expression was found in 81.3% of cases, mainly 0+ (80.8%), while 18.7% showed heterogeneity, primarily scattered (59.1%) or clustered (37.9%). Invasive lobular carcinoma cases were mostly homogeneous (92.3%). HER2 heterogeneity was significantly associated with histologic grade ($p=0.005$) and marginally with estrogen/progesterone expression ($p=0.060$), but not with tumor size ($p=0.071$). **Conclusion:** Heterogeneity was prevalent in HER2 expression, especially in invasive breast carcinoma, and should be addressed in pathology reports, especially in the antibody-drug conjugate scenario.

Keywords: breast neoplasms; ErbB-2 receptor.

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Dual anti-human epidermal growth factor receptor-type 2 blockade with taxane as first-line treatment for HER2-positive breast cancer with visceral metastases: a technology incorporation assessment within the Brazilian Unified Health System

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Objective: To assess the clinical outcomes of dual anti-human epidermal growth factor receptor-type 2 (HER2) blockade with taxane as first-line therapy for HER2-positive breast cancer with visceral metastases within the Brazilian Unified Health System (SUS, Sistema Único de Saúde). **Methods:** This was a retrospective analysis of women with HER2-positive metastatic breast cancer and visceral metastases treated at the National Cancer Institute (INCA, Instituto Nacional de Câncer) between 2020 and 2022. Eligible patients received first-line therapy with dual HER2 blockade plus taxane. Demographic, clinical, and pathological data were collected, and therapeutic outcomes were assessed based on progression-free survival, overall survival, and cardiotoxicity. **Results:** Seventy-one patients were included; 44% were under 50 years old. The most frequent metastases at baseline were liver (64%), bone (49%), and lung (46%). Fourteen patients developed central nervous system metastases during treatment. The median follow-up was 44 months, with a median progression-free survival of 23 months. At 24 months, overall survival was 73.9% (95% confidence interval [CI] 61.8–82.7) and progression-free survival was 42.6% (95%CI 30.0–54.5). Cardiotoxicity led to treatment discontinuation in 8.5% of patients. **Conclusion:** This study highlights the effectiveness of the dual blockade regimen within SUS in a cohort with 100% visceral metastasis. After 44 months, 50% of patients remained alive without disease progression, and the cardiac safety profile was predictable, both consistent with phase III trials. The 24-month overall survival rate of 73,9% was lower than expected, likely due to the more aggressive disease in our cohort and lack of HER2 blockade in later lines of therapy.

Keywords: ErbB-2 receptor; breast cancer.

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Impact of the COVID-19 pandemic on breast cancer diagnosis and treatment

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Objective: To assess the impact of the COVID-19 pandemic on breast cancer diagnosis and treatment. **Methods:** This is a retrospective cohort study involving patients at the Barretos Cancer Hospital diagnosed with breast cancer between 2018 and 2023. Patients were divided into three groups: pre-pandemic (2018–2019), pandemic (2020–2021), and post-pandemic (2022–2023). The sample, comprising approximately 3,500 patients, was analyzed using appropriate statistical tests to evaluate associations between epidemiological, histopathological, and clinical characteristics, and cancer outcomes. **Results:** Preliminary analyses revealed significant variations in diagnosis and treatment during the three periods. There was an increase in the age of patients post-pandemic, with more women over 60 years (24.9%; $p < 0.0001$). Clinical staging showed a decrease in stage I (from 23.4% to 14.9%) and an increase in stage III (from 29.6% to 36.7%) during the pandemic, indicating more advanced diagnoses ($p = 0.0082$). Pathological staging followed a similar trend, with a decrease in stage I and an increase in stage II (38.1% post-pandemic). Initial treatment also changed, with a reduction in surgeries during the pandemic (from 59.3% to 37.7%) and an increase in exclusive palliative care (from 0.4% to 2.4%). The use of neoadjuvant hormone therapy was notable during the pandemic (18.1%). The type of surgery varied, with an increase in quadrantectomy in the post-pandemic (from 54.4% to 67.2%) and a decrease in mastectomy with immediate reconstruction (from 23.5% to 17.0%). There was a significant increase in the luminal B HER-negative molecular subtype post-pandemic (from 8.2% to 35.3%; $p < 0.0001$). **Conclusion:** The COVID-19 pandemic significantly impacted the diagnosis and treatment of breast cancer, leading to later diagnosis and changes in treatment modalities.

Keywords: breast cancer; COVID-19; breast cancer treatment.

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Obesity and overweight levels in Brazilian women with early-stage estrogen receptor-positive (ER+) breast cancer in adjuvant endocrine therapy

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Introduction: There is a correlation between breast cancer mortality and recurrence and being overweight or obese.

Objective: This study aimed to evaluate obesity and overweight levels in Brazilian women with early-stage estrogen receptor-positive (ER+) breast cancer in adjuvant endocrine therapy. **Methods:** Women with early-stage ER+ breast cancer on adjuvant endocrine therapy for at least six months were included. Patients were stratified according to body mass index (eutrophy: 18.5 to 24.9 kg/m²; overweight: 25.0 to 29.9 kg/m²; and obesity: ≥30 kg/m²). **Results:** From June 2021 to March 2024, 557 women from 11 Brazilian institutions were recruited. The mean age was 62 years, mean tumor size was 2.14 cm, and mean duration of endocrine therapy was 3.1 years. Of the total, 27% of patients were obese, 42% were overweight, and 30.8% had eutrophy. Women with higher education had a lower prevalence of obesity (26% vs. 31%; p=0.030). The presence of comorbidities had a higher prevalence among obese women (33% vs. 24; p<0.001). Patients treated in public hospitals had a higher prevalence of obesity (35%) than in private hospitals (20%) (p<0.001). Patients in stage III were often obese (odds ratio [OR] 2.88, 95% confidence interval [CI] 1.55–5.33; p<0.001). Better physical functioning was associated with a lower chance of obesity (OR 0.95, 95%CI 0.93–0.97; p<0.001) and overweight (OR 0.96; 95%CI 0.94–0.98; p<0.001). In multivariate analysis, stage III disease (OR 1.72), prior lumpectomy (OR 7.2), and axillary lymphadenectomy (OR 2.8) were related to obesity. **Conclusion:** Only a third of the women evaluated in the study had an adequate body mass index, which leads to a worrying risk of morbidity. Some characteristics related to obese patients, such as more patients treated in the public service and with a lower level of education, suggest the hypothesis that economic factors may be related to the disease.

Keywords: breast cancer; obesity; treatment.

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Cyclin inhibitors for breast cancer: a comparative real world data analysis

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Objective: This study aimed to evaluate the impact of different cyclin-dependent kinase 4 and 6 inhibitors (CDK 4/6) as first line therapy on median overall survival (mOS) in a contemporary real-world setting. **Methods:** Data from TriNetX (a global dataset of electronic medical records of patients from 111 healthcare organizations) were analyzed and queried for patients with specific terms between 2004–2024. A propensity score matching analysis balanced the cohort. Ribociclib (Rib), palbociclib (Palb), and abemaciclib (Abem) were compared using a 2x2 group selection method. Analysis 1 compared Rib vs. Abem; Analysis 2 compared Rib vs. Palb; and Analysis 3 compared Palb vs. Abem. The mOS was evaluated with the Kaplan–Meier method. Statistical comparison was performed with a stratified log-rank test. **Results:** No difference in risk for death was identified in Analysis 1 (271 patients in each arm), with a not reached mOS for both cohorts (5 years; OS 61.82% vs. 53.66%, $\chi^2=0.03$; $p=0.863$; hazard ratio [HR] 0.964; 95% confidence interval [CI] 0.634–1.467). Analysis 2 (980 patients in each arm) revealed a statistically significant increased risk of death when receiving Palb over Rib (risk ratio [RR] 2.42; 95%CI -0.202–0.280; $p\leq 0.0001$) with mOS of 1,286 vs. 1,946 days ($\chi^2=15.447$; $p<0.0001$; HR 1.441; 95%CI 1,200–1,731). Analysis 3 (318 patients in each arm), revealed a statistically significant increased risk of death when receiving Palb over Rib (RR 2.47; 95%CI -0.231–0.372; $p\leq 0.0001$) with mOS of 1,124 vs. 1,706 days ($\chi^2=9.025$; $p<0.003$; HR 1.56, 95%CI 1,165–2,091). **Conclusion:** Our study revealed that patients treated with Palb instead of Rib or Abem achieved a lower mOS with an increased risk of death from breast cancer. Additionally, when comparing Rib to Abem, despite a percentage trend favoring Rib, no difference was found in the overall survival analysis for the risk of death from breast cancer.

Keywords: breast neoplasms; metastasis; cyclin-dependent kinases; treatment outcome; survival.

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CDK4/6 inhibitors in breast cancer: is it possible to predict response?

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Introduction: Up to 20% of luminal breast cancer patients present recurrent disease within ten years. The development of cyclin-dependent kinase 4 and 6 inhibitors (CDK4/6) has transformed treatment paradigms due to significant improvements in outcomes. However, no predictive biomarker has been identified despite extensive translational research. Additionally, evidence on CDK4/6 efficacy in specific populations (e.g., pathogenic germline carriers) and clinical scenarios (treatment sequencing, combinatorial strategies, and post-CDK4/6 therapy) remains limited. **Objective:** This study aimed to review clinical, histological, and genomic profile searching for predictive variables of better responses. **Methods:** This is a retrospective study of luminal breast cancer patients treated with three available CDK4/6: abemaciclib (AB), ribociclib (RIB), and palbociclib (Pb), between 2018 and 2024. **Results:** A total of 378 patients were included, with a median age of 60 years; 38% were pre-menopausal. Median progression-free survival (PFS) and overall survival (OS) were 30 and 56 months (m), respectively. Most (65%) received CDK4/6 in 1L, 15% in 2L, and 20% in later lines. PFS and OS declined progressively: 1L (36/62m), 2L (22/52m), others (14/33m) ($p < 0.01$). No significant PFS ($p = 0.96$) or OS ($p = 0.42$) differences were observed between CDK4/6 (AB 24/43m; RIB 25/45m; PB 27/45m). Patients with visceral metastasis had worse PFS/OS (28 vs. 32m, $p = 0.009$; 49 vs. 60m, $p = 0.01$). High Ki67 (>70%) predicted poorer outcomes (PFS 15 vs. 29m, $p = 0.009$; OS 34 vs. 56m, $p = 0.017$). **Conclusion:** These results may help refine patient selection and therapeutic strategies and serve as a basis for prospective studies aiming to validate predictive biomarkers in hormone receptor-positive metastatic breast cancer.

Keywords: breast cancer; immunohistochemistry.

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Impact of fat grafting combined with expander-to-implant exchange in a one-stage procedure after irradiation

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Introduction: Reconstructive failure rates for patients undergoing radiation therapy following tissue expander placement exceeded 30%, with grade 3 or 4 capsular contracture occurring in over 50% of cases during a 6-year follow-up. Previous studies indicated that two sessions of lipofilling prior to expander-to-implant exchange significantly reduced complication rates. **Objective:** This study aimed to evaluate the safety and effectiveness of a single session of immediate fat grafting combined with expander-to-implant exchange in irradiated patients. **Methods:** This retrospective cohort study assessed patients diagnosed with invasive breast carcinoma who underwent post-mastectomy radiation therapy and two-stage implant-based breast reconstruction, from 2015 to 2024. A single session of immediate fat grafting was performed concurrently with expander-to-implant exchange. The outcomes assessed included reconstructive failure, aesthetic results, capsular contracture, and infection rates. **Results:** A total of 36 patients (mean age 50.3 years, range 24–67) with stage II or III breast cancer were included. The median volume of fat grafting was 90 mL (range 40–285). At a median follow-up of 48 months (range 16–205), there were seven cases of reconstruction failure (19.4%): four due to infection, one due to severe capsular contracture, one due to trauma, and one due to pyoderma gangrenosum. Four patients (11.1%) developed grade 3 or 4 capsular contracture. **Conclusion:** Immediate fat grafting during expander-to-implant exchange after radiotherapy reduced the rates of capsular contracture and reconstructive failure compared to historical controls, although the results were less pronounced than those observed with two prior sessions of lipofilling. Further studies with larger cohorts are needed to refine the optimal fat grafting protocol for irradiated breast reconstructions.

Keywords: breast neoplasms; radiotherapy; adipocytes; implant capsular contracture.

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Tumor-infiltrating lymphocytes as prognostic markers in a Brazilian population with neoadjuvant chemotherapy-treated breast cancer: a survival study

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Objective: To assess the association between overall survival at 5 and 10 years and the percentage of tumor-infiltrating lymphocytes (TILs) in breast cancer patients who underwent neoadjuvant chemotherapy followed by surgery at the University Hospital of the Federal University of Sergipe (HU-UFS). **Methods:** This is a survival study with uni- and multivariate analyses using core biopsy slides from a retrospective cohort of breast carcinoma patients between June 2011 and March 2019. The variables analyzed included age, histological type, tumor grade, post-surgical clinical staging, immunohistochemical profile, and residual neoplasia. TILs were evaluated by two independent pathologists who were blinded, using criteria from the International TILs Working Group. This study received approval from the research ethics committee of the Federal University of Sergipe following the guidelines of Resolution CNS 466/12. **Results:** We analyzed 46 patients with a mean age of 49.5 years. Molecular subtypes were: 50% luminal A, 26.1% triple negative, 13% triple positive, and 10.9% HER2-enriched. Patients with TILs \leq 5% had better 5- and 10-year survival in all molecular subtypes, with a more significant drop in survival for those with TILs $>$ 5%. Five-year survival was significantly higher in patients with TILs \leq 5% ($p=0.038$) but no significant difference was found at 10 years ($p=0.059$). TILs did not correlate significantly with complete pathological response or overall survival, though patients with TILs $>$ 5% tended to have a worse prognosis. **Conclusion:** In this cohort, breast cancer patients treated with neoadjuvant chemotherapy and surgery had better 5-year survival with TILs \leq 5%. While TILs did not significantly correlate with long-term survival, patients with TILs $>$ 5% showed a trend toward poorer outcomes. These results suggest TILs may be a valuable prognostic marker for short-term survival, but further research is needed to assess their role in long-term outcomes.

Keywords: lymphocytes; breast neoplasms; tumor microenvironment; survival analysis.

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Co-occurrence of germline pathogenic variants in breast cancer predisposition genes: a study in Northeast Brazil

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Introduction: Breast cancer is the most common and deadliest cancer diagnosed in women worldwide. Approximately 5–10% of cases are attributed to germline pathogenic (P) or likely pathogenic (LP) variants in cancer predisposition genes. Increased use of next-generation sequencing to detect these mutations, driven by their predictive and prognostic value for patients and families, has led to greater identification of individuals with multiple (P/LP) variants. However, the co-occurrence of multiple germline pathogenic variants in breast cancer genes is rare, and their impact on carrier cancer risk remains unclear. **Objective:** To comprehensively define the pattern and frequency of co-occurring pathogenic/likely pathogenic mutations within a breast cancer patient cohort from Ceará. **Methods:** This cross-sectional study examined patients from a private oncology clinic in Ceará, Brazil, who met the clinical criteria for Hereditary Breast and Ovarian Cancer predisposition (HBOC). Molecular analyses were conducted using commercial multi-gene cancer panels from accredited laboratories between 2018 and 2023. Sequencing was performed using next-generation sequencing capture panels that included 27 to 84 genes depending on clinical suspicion. **Results:** Among 1,055 patients, 141 (13.4%) carried a germline P/LP variant in HBOC genes. Of those, 135 (95.4%) had one (P/LP) variant, while 6 (4.6%) had two (P/LP) variants. In the entire cohort, the most frequently mutated gene was BRCA1 (34.8%), followed by BRCA2 (15.2%), CHEK2 (14.1%), PALB2, ATM, MUTYH, RAD51, TP53, and NF1. Among patients with co-occurring mutations, a common pattern involved variants in BRCA1 and MUTYH, observed in five patients. One patient presented with a triple co-occurrence of BRCA1, MUTYH, and BARD. The remaining co-occurrence case involved ATM and BRCA2. **Conclusion:** This study uncovers co-occurring germline variants in breast cancer predisposition genes in Northeast Brazil, highlighting potential regional genetic specificities. The clinical implications of these co-occurrences remain uncertain, emphasizing the necessity for prospective cohorts to ascertain whether current risk assessments need adaptation for this population and to guide personalized management.

Keywords: breast neoplasms; risk management; mutation.

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Cannabidiol promotes immunogenic cell death and controls breast tumor development

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Introduction: Cannabidiol (CBD) therapy has emerged as a promising anticancer drug in many types of cancer models. However, the molecular mechanisms underlying the contribution of antitumor immunity to the therapeutic efficacy of CBD remain unclear. **Objective:** This study aimed to provide strong evidence that CBD is a *bona fide* immunogenic cell death inducer in breast cancer model. **Methods:** Breast tumor (4T1) cells were treated with CBD and assessed for cell proliferation, as well as HMGB1 and ATP release. CBD-treated 4T1 cells were co-cultured with splenocytes, and the cytokine profile was analyzed using flow cytometry and enzyme-linked immunosorbent assay (ELISA). Additionally, wild-type mice were injected subcutaneously with 4T1 cells, and tumor growth was monitored, followed by the characterization of tumor-infiltrating immune cells. **Results:** CBD administration decreased tumor growth in different models (4T1 and 65NR) of breast cancer. By using immunocompromised mice, it was possible to show that adaptive antitumor immunity is essential for efficient tumor control in CBD therapy. Indeed, CBD treatment resulted in the modification of the tumor microenvironment, up-regulating antitumoral proinflammatory cytokines, associated with activation of dendritic cells and enhanced CD8⁺ T cell effector function. Mechanistically, CBD treatment induced a stress response in 4T1 tumor cells by reactive oxygen species (ROS) accumulation and upregulation of nitric oxide synthase 2 (NOS2), that leads to unfolded protein response activation, resulting in increased immunogenicity and impaired cell growth and proliferation. CBD efficiently promoted immunogenic cell death hallmarks and enhanced expression of antigen-presenting molecules on the surface of breast cancer cells. In a co-culture system with spleen cells, CBD-treated tumor cells stimulated the production of pro-inflammatory chemokines and cytokines and induced activation of dendritic cells and T cells. Combination therapy revealed that CBD enhanced efficacy of anti-PD-L1 in breast cancer model. Vaccination protocol with CBD-induced dying cells efficiently protected against breast tumor progression. **Conclusion:** The findings revealed CBD as immunogenic cell death inducer anticancer drug and open a new avenue of opportunities in cancer therapy against breast cancer which aims the establishment long-lasting antitumor immunity.

Keywords: cannabidiol; immunogenic cell death; breast cancer; tumor.

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Cost and duration of hospitalizations due to puerperal mastitis in the Brazilian Unified Health System

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Objective: This study aimed to analyze hospitalizations due to puerperal mastitis in the Brazilian Unified Health System (SUS) from 2018 to 2022. **Methods:** A cross-sectional study was conducted using data from the Hospital Information System (SIH/DATASUS). All hospitalizations with a primary diagnosis of postpartum breast infection in women aged 15–49 years were analyzed. Length of stay was measured in days, and costs in Brazilian reais were adjusted using the IPCA inflation index. Trends in length of stay and costs from 2018 to 2022 were assessed using Poisson regression. **Results:** A total of 11,279 hospitalizations were analyzed. The average length of stay was 5.09 days for clinical treatment and 4.50 days for surgical treatment. From 2018 to 2022, the surgical treatment rate increased (50.8% to 54.2%; $p < 0.05$). The Southeast, South, and Central-West regions showed a decline in hospitalization duration. Daily costs ranged from BRL 67.13 to BRL 154.55, totaling BRL 1,140,016.00 over five years, with higher costs for surgical treatment (BRL 123.71 vs. BRL 77.61 for clinical treatment). Costs rose nationwide from 2018 to 2021 ($p < 0.05$), particularly in the South and Central-West, but declined in 2022. **Conclusion:** Clinical treatment is less costly than surgical treatment but increases hospitalization duration. The high costs of hospital care for puerperal breast infections highlight the need for effective prevention and management strategies.

Keywords: mastitis; postpartum period; hospitalization; length of stay; cost analysis.

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Rhabdomyolysis due to interactions between CDK4/6 inhibitors and statins during breast cancer treatment: a case-based systematic review

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Introduction: Cyclin-dependent kinase 4 and 6 inhibitors (CDK4/6) are a significant advance in the treatment of hormone receptor-positive and human epidermal growth factor receptor-type 2-negative (HR+/HER2-) metastatic breast cancer, with improved survival rates. Nonetheless, their concurrent use with statins, a frequently prescribed class of drugs, may increase the risk of rhabdomyolysis as a consequence of pharmacokinetic and pharmacodynamic interactions.

Objective: This systematic review analyzed literature case reports to provide practical insights into clinical presentations, therapeutic strategies, and outcomes, aiming to guide safer real-world clinical practices. **Methods:** The databases PubMed, Embase, and Web of Science were searched for case reports and case series reporting rhabdomyolysis in individuals treated with CDK4/6, from inception to January 2025. Data on demographics, clinical features, laboratory findings, management strategies, and patient outcomes were extracted. Quality assessment of the included cases was performed based on the Joanna Briggs Institute critical appraisal checklists. The protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO), under CRD42025631033. **Results:** Six case reports were analyzed involving female patients aged 55–81 years. All patients were treated for metastatic breast cancer with CDK4/6 (ribociclib or palbociclib) alongside statins (simvastatin, atorvastatin, or rosuvastatin). The onset of rhabdomyolysis occurred between 3 days and 48 months after combination therapy. Clinical presentations included myalgia, muscle weakness, and dark urine, with creatine kinase levels ranging from 3,070 to 47,000 U/L. Acute kidney injury was identified in four cases. Management primarily involved cessation of the implicated drugs (CDK4/6 or statins) and hydration, with adjunctive treatments such as corticosteroids, plasma exchange, or intravenous immunoglobulin. Five patients recovered fully, while one fatality was reported. **Conclusion:** Rhabdomyolysis due to CDK4/6–statin interactions is a rare complication, albeit with a potentially life-threatening risk. Monitoring, prompt intervention, and individualized treatment strategies are paramount to preventing complications and improving patient outcomes.

Keywords: breast cancer; statins; rhabdomyolysis; myopathy.

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An analysis of sexual dysfunction symptoms in hormone receptor positive breast cancer patients during adjuvant endocrine therapy in a Brazilian center

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Objective: This study, conducted at a single center in Brazil, aimed to evaluate the impact of endocrine therapy on the sexual lives of 105 patients diagnosed with early-stage breast cancer. **Methods:** The women selected for this study were diagnosed with early-stage hormone receptor-positive and human epidermal growth factor receptor-type 2-negative (HR+/HER2-) breast cancer and had been undergoing adjuvant hormone therapy for at least six months. Participants were divided into two groups: those who had engaged in sexual activity in the past four months (considered sexually active) and those who had not (considered sexually inactive). Women in the first group completed the Female Sexual Function Index (FSFI) questionnaire, and sexual dysfunction was identified as a score of ≤ 26.55 . Data were collected using the REDCap software and analyzed using RStudio. **Results:** A total of 105 women diagnosed with early-stage breast cancer were evaluated. Prior to their diagnosis, 65.4% were sexually active, but only 42.3% reported being sexually active in the four weeks leading up to the questionnaire. The FSFI score indicated sexual dysfunction in 77.3% of patients, with the main contributing factors being low libido and pain during sexual activity, along with other contributing elements. Additionally, patients reported moderate satisfaction with their sexual lives in general. **Conclusion:** Data analysis revealed a notable decline in the sexual quality of life of patients undergoing hormone therapy. This decline reflects not only the effects of hormone therapy but also the impact of cancer diagnosis and other phases of treatment. The findings highlight the importance of oncologists addressing this issue during consultations and directing patients to seek help, if needed, from specialists in sexology.

Keywords: breast cancer; sexuality; survivorship.

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Analysis of factors contributing to delayed initiation of treatment following definitive diagnosis of breast cancer at a University Hospital in Goiás, Brazil

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Objective: To describe a series of cases of patients treated at the Hospital das Clínicas of the Federal University of Goiás, diagnosed with breast cancer, and identify the time elapsed from the date of definitive diagnosis to the initiation of specific treatment, while also exploring factors associated with the delays. **Methods:** This is a retrospective, descriptive-analytical study involving patient record reviews from January 2017 to July 2019 at a university hospital in Goiás. Data on sociodemographic characteristics, diagnosis dates, staging, and treatment initiation were collected. Factors associated with therapeutic delays were analyzed, focusing on patient, physician, and health system-related aspects. **Results:** The study reviewed 127 female patients, with a median age of 52.4 years. The median time from symptom onset to specialist consultation was five months. Notably, delays related to system factors were substantial, averaging 112 days from the detection of abnormalities in initial exams to the beginning of treatment. These delays were fundamentally due to inefficiencies in primary care providers and the response times of pathology services. Furthermore, the educational level of the patients demonstrated a statistically significant correlation with the stage of the disease at the time of presentation. **Conclusion:** The time between diagnosis and treatment initiation significantly exceeds national guidelines. Factors such as education level and the efficiency of primary health care and pathology services are directly related to treatment delays. The quality of medical records and their management impact data acquisition for analysis and may influence treatment delay. It can be concluded that delays in breast cancer treatment are multifactorial, with significant contributions from primary healthcare and pathology services inefficiencies. Educational interventions for both healthcare providers and patients, coupled with system-level reforms, are essential to ensure timely breast cancer treatment.

Keywords: breast cancer; treatment delay; health system; diagnosis.

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Antitumor potential of GSK343 in breast cancer cells: an in vitro study

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Introduction: Breast cancer is a heterogeneous and multifactorial disease, requiring specific therapeutic approaches for each subtype. Among promising molecular targets is EZH2, a methyltransferase associated with tumor progression and poor prognosis. **Objective:** This study aimed to investigate the cytotoxic and antiproliferative potential of the selective enhancer of zeste homolog 2 (EZH2) inhibitor, GSK343, in breast cancer cell lines MDA-MB-231 (triple-negative) and BT-474 (luminal B/ human epidermal growth factor receptor-type 2-positive [HER2+]), treated with different concentrations of GSK343. **Methods:** Cells were cultured in appropriate medium (37°C, 5% CO₂) and treated with GSK343 at established concentrations (1, 5, 15, 30, and 60 µM). Assays were performed after 24, 48, and 72 hours of exposure. Cell viability was assessed using the MTT assay, while apoptosis was quantified using a deoxyribonucleic acid (DNA) fragmentation assay kit. Statistical methods included the use of analysis of variance (ANOVA), followed by Tukey's post hoc test, with significance set at $p < 0.05$. **Results:** Cytotoxicity assays showed a dose- and time-dependent effect of GSK343 in both cell lines. In MDA-MB-231, a significant reduction in cell viability was observed from 15 µM at 48 hours ($p < 0.01$), which intensified at 72 hours, with a marked increase in apoptotic cells at 30 and 60 µM ($p < 0.001$). In BT-474, the effect was more modest at lower doses but still showed a significant reduction in proliferation and induction of apoptosis at concentrations above 30 µM after 72 hours ($p < 0.05$). **Conclusion:** The GSK343 inhibitor can exert significant cytotoxic and antiproliferative effects, particularly on MDA-MB-231 cells, suggesting greater sensitivity of the triple-negative subtype to EZH2 inhibition. These findings indicate the therapeutic potential of GSK343 as an epigenetic agent in aggressive breast cancers and reinforce the need for further studies for clinical validation.

Keywords: breast neoplasms; genomic instability; apoptosis.

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Development and validation of the axillary web syndrome classification scale

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Objective: To develop and validate a clinical scale for the classification of axillary web syndrome (EC-SRA). **Methods:** This is an exploratory, methodological development research with a quantitative approach. The study included 23 women undergoing surgical treatment for breast cancer who received axillary approaches and were treated at the physiotherapy outpatient clinic of the Mastology Service of Hospital das Clínicas (Cora/HC), and signed the informed consent form. Women with alterations or impairment of the shoulder ipsilateral to the breast operated prior to surgical treatment were excluded. The methodology for constructing the instrument was divided into stages: 1. Establishment of the conceptual structure; 2. Construction and structuring of EC-SRA items; 3. Content validation (by seven experts); 4. Assessment of usability and refinement of the instrument; and 5. Analysis of results. The research was conducted between April 2020 and August 2021. **Results:** The calculated content validity index was 0.97, indicating a high level of agreement among experts, since values of at least 0.80 are considered acceptable. The reliability of the instrument, verified through internal consistency measured by calculating Cronbach's alpha among evaluators, was 0.8, a value considered ideal. The overall internal consistency of the instrument was considered satisfactory. The analysis of agreement of the instrument measured by the evaluators showed a general correlation coefficient of 0.986, with a $p < 0.001$. **Conclusion:** Based on the usability assessment, it is possible to conclude that the EC-SRA is capable of measuring the cord and reproducing consistent, stable, and accurate results, presenting reliability. The EC-SRA, therefore, has the potential to be widely used and avoid the merely subjective assessment of the SRA, which is the current clinical reality.

Keywords: physical therapy services; sentinel lymph node biopsy; fibrosis; validation study; lymphatic system.

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Oncological outcomes of breast-conserving surgery versus mastectomy following neoadjuvant chemotherapy in a contemporary multicenter cohort

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Objective: To evaluate local recurrence (LR), distant recurrence (DR), and death in non-metastatic breast cancer patients undergoing breast-conserving surgery (BCS) or mastectomy following current neoadjuvant chemotherapy (NAC) regimens.

Methods: This retrospective multicenter cohort study was conducted with breast cancer patients (cT1–T4, cN0–N3, M0) treated with BCS or mastectomy following NAC at the Fortaleza General Hospital and the Pontifícia Universidade Católica do Rio Grande do Sul (PUC/RS) between 2013 and 2023. **Results:** Patients submitted to NAC were evaluated (n=365; mastectomy: 165; BCS: 200). More mastectomy patients were over 70 years old (12.7% vs. 7.0%; p=0.02) and had T4b tumors (16.4% vs. 4.5%; p=0.0003), whereas more BCS patients had node-negative axilla (42% vs. 31.5%; p=0.02). After a mean follow-up of 65 months (range: 4–124), LR and DR were similar in the mastectomy and BCS groups (4.8% vs. 5.0%; p=0.95 and 10.9% vs. 9%; p=0.58, respectively). More deaths occurred in the mastectomy group (8.5% vs. 3.0%; p=0.03). Ten-year LR-free survival was higher in the BCS group (98.5% vs. 95.0%; hazard ratio [HR] 3.41; 1.09–10.64; p=0.03), while 10-year DR-free survival was similar (91.0% BCS vs. 89.0% mastectomy, HR 1.25; 0.65–2.42; p=0.4). Overall survival was better in the BCS group (97.0% vs. 91.5%; HR 2.62; 1.06–6.69; p=0.03). Estimated 10-year disease-free survival, stratified according to tumor stage, showed no difference except for T4, for which the risk was greater in the mastectomy group (94.5% vs. 81.8%; HR 2.86; 1.54–5.30; p=0.0008). T3/T4 (odds ratio [OR] 4.37, 1.03–21.91; p=0.04) and axillary dissection (OR 5.11; 1.14–35.52; p=0.04) were associated with LR in the BCS group. **Conclusion:** In this cohort, BCS proved to be a safe alternative to mastectomy following treatment with NAC, even in cases of locally advanced breast cancer.

Keywords: breast neoplasms; chemotherapy; mastectomy; neoadjuvant therapy; segmental mastectomy.

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Breast cancer: 20-year evolution of the epidemiological and clinical profile in a reference cancer center

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Objective: To evaluate the epidemiological profile of female patients diagnosed with breast cancer between 2003 and 2023 at the Instituto Sul Paranaense de Oncologia in Ponta Grossa, Paraná. **Methods:** Data were collected from electronic medical records using a partially structured spreadsheet, followed by statistical analysis conducted with R software. **Results:** During the study period, 3,115 patients were diagnosed with breast cancer in this institution. The average age at diagnosis was 56.23 years, with slight variations over the analyzed period. The age group most affected was 51–65 years (38.39%), preceded by the 41–50 age group (24.78%). The most prevalent histological type was invasive ductal carcinoma (81.22%), then by ductal carcinoma in situ (7.51%), and lobular carcinoma (7.32%). The study identified a statistically significant difference in clinical stages at diagnosis between patients treated in the public and private healthcare systems. In advanced stages, such as stage III, 34.91% of patients in the Brazilian Unified Health System (SUS) were diagnosed at this stage, compared to only 18.66% in the private system. Similarly, in stage IV, the metastatic phase of the disease, 12.36% of patients were diagnosed in SUS, compared to 5.75% in the private healthcare system, with statistically significant differences between the two groups. **Conclusion:** The epidemiological profile of patients was consistent with the literature, including the distribution of histological types of breast cancer. No increase in cases among younger patients (≤ 40 years) was observed. Additionally, a significant difference in clinical stages at diagnosis was identified between public and private healthcare systems, reinforcing previous findings that patients in the public system are often diagnosed at more advanced stages, leading to worse clinical outcomes.

Keywords: breast neoplasms; epidemiology; women's health.

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Genetic testing impact on clinical decision-making in Brazilian breast cancer patients with identified genetic variants

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Objective: The present study aimed to analyze the impact on clinical decision-making of an identified pathogenic or likely pathogenic genetic variant in breast cancer Brazilian patients. **Methods:** This is a retrospective observational cohort of breast cancer patients with known pathogenic variants (PV), likely pathogenic variants (LPV), and variants of uncertain significance in cancer-related genes in four private and one philanthropic institution in Minas Gerais, Brazil. Pathology and medical records were reviewed, and patients were interviewed. **Results:** A total of 62 patients were included. Forty-three patients with breast cancer and a PV/LPV underwent primary breast surgery; 22 of them (51.1%) were aware of the genetic variant at the time of surgery. In the group of patients who were aware of the variant at surgery, 68.2% underwent bilateral surgery; in the group not aware, only 4.7% underwent bilateral mastectomy ($p < 0.001$). The median time from diagnosis to genetic testing was 94.8 months in patients diagnosed before 2015 and 4.8 months in those diagnosed after 2015 ($p < 0.001$). Thirty-eight patients (57.5%) had access to genetic counseling in the entire cohort, and only 3 of 18 (16%) were from the public sector. Nineteen different PV/LPV were found in BRCA1, 13 in BRCA2, six in TP53, four in ATM, and four in PALB2. The most common PV was c.2T>G (p.Met1Arg) in BRCA2, present in four unrelated patients. **Conclusion:** This analysis shows a significant delay in genetic testing and limited access to counseling, which has influenced the high rate of conservative surgery for patients unaware of their genetic diagnosis at the time of surgery. These findings underscore the urgent need to expand hereditary cancer testing and counseling services in Brazil.

Keywords: breast neoplasms; hereditary breast and ovarian cancer syndrome; BRCA1 gene; BRCA2 gene; prophylactic mastectomy.

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Epigenetic modulation of Aurora kinases A and B by 5-aza-2'-deoxycytidine in breast cancer cells

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Introduction: Aurora kinases A (AURKA) and B (AURKB) play crucial roles in cell cycle regulation and are frequently over-expressed in various types of cancer, including breast cancer. Epigenetic alterations, such as deoxyribonucleic acid (DNA) methylation, may contribute to the dysregulation of these genes. **Objective:** This study aimed to evaluate the modulatory effects of 5-aza-2'-deoxycytidine (5-aza-dC), a DNA methylation inhibitor, on the expression of AURKA and AURKB genes in luminal (MCF7) and human epidermal growth factor receptor-type 2-positive (HER2+) (BT474) breast cancer cell lines treated with different concentrations of the demethylating agent. **Methods:** Cells were cultured under standard conditions (37°C, 5% CO₂) and treated with 5-aza-dC at various concentrations (10, 20, 30, and 50 µM) for 24, 48, and 72 hours. After treatment, total ribonucleic acid (RNA) was extracted and converted into complementary (c)DNA, followed by gene expression analysis via reverse transcription-quantitative polymerase chain reaction (RT-qPCR). Normalization was performed using housekeeping genes, and data were statistically evaluated using analysis of variance (ANOVA), with Tukey's post hoc test, and with $p < 0.05$ considered significant. **Results:** The experiments revealed a dose-dependent response profile in both cell lines. In MCF7, a significant reduction in AURKA expression was observed at 30 µM and 50 µM, mainly after 48 hours and 72 hours ($p < 0.01$). For AURKB, a significant reduction was observed starting at 20 µM at 72 hours ($p < 0.05$). In the BT474 cell line, both AURKA and AURKB showed a significant decrease in expression at 50 µM, especially at 72 hours ($p < 0.001$). **Conclusion:** Treatment with 5-aza-dC negatively modulated AURKA and AURKB expression in a dose- and time-dependent manner, indicating a possible antitumor epigenetic effect. These findings suggest the potential of 5-aza-dC as an adjuvant therapeutic agent in breast cancers characterized by Aurora kinase overexpression.

Keywords: breast neoplasms; epigenetic; AURKA.

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Association between body composition and physical activity level with quality of life of women with hormone receptor-positive breast cancer undergoing adjuvant endocrine therapy

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Objective: To evaluate associations between body composition, physical activity level, and quality of life in women with hormone receptor-positive breast cancer undergoing adjuvant endocrine therapy. **Methods:** Recruitment was carried out in two tertiary hospitals: one public and one private, with women under adjuvant endocrine therapy for at least six months. Analyses included: sociodemographic data; weight and height; body composition by electrical bioimpedance; level of physical activity by the short version of the International Physical Activity Questionnaire; and quality of life by scales EORTC QLQ-C30 and EORTC QLQ-BR23. **Results:** A total of 107 women were included, with a mean age of 56.9 years and a mean hormone therapy of 3.4 years. In the analyses between body mass index, body fat percentage, and independent variables, the EORTC QLQ-C30 score of physical function and the EORTC QLQ-BR23 score of pain were considered significant predictors. For each increase of 1% in physical function ($p=0.0365$) and pain ($p=0.0046$) scores, there was a significant increase in body mass index. For each increase in physical function score, there was a significant reduction in fat percentage ($p=0.0025$). The association between physical activity levels and independent variables showed that the EORTC QLQ-C30 global quality of life score was considered a significant predictor. With an increase in the global quality of life score, the likelihood of a patient being in a lower physical activity category rather than a higher one decreased significantly ($p=0.0175$). **Conclusion:** Both physical function and pain scores played significant roles as predictors of body mass index and body fat percentage in the patients analyzed. In addition, quality of life was a significant predictor of physical activity levels.

Keywords: body composition; physical activity; quality of life; breast cancer.

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Transcriptional modulation of SMYD2 and SMYD3 genes by ozone therapy in breast tumor cells

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Introduction: Breast cancer is one of the leading causes of mortality among women worldwide, which drives the search for new therapeutic approaches. In this context, the SMYD2 and SMYD3 genes, which belong to the lysine methyltransferase family, have been associated with tumor progression and epigenetic regulation in cancer. **Objective:** This study aimed to evaluate the gene expression levels of SMYD2 and SMYD3 in luminal breast carcinoma cells (MCF7) and triple-negative carcinoma cells (DU4475) after treatment with different concentrations of ozone. **Methods:** Cells were cultured under standard conditions (37°C, 5% CO₂) and subjected to in vitro ozone therapy with doses of 5, 10, 15, 20, 30, and 40 µg/mL for 40 minutes. After 24, 48, and 72 hours of incubation, total ribonucleic acid (RNA) was extracted, and complementary deoxyribonucleic acid (cDNA) was synthesized. Gene expression was quantified by reverse transcription-quantitative polymerase chain reaction (RT-qPCR) using housekeeping genes for normalization. Statistical evaluation was performed using analysis of variance (ANOVA) followed by Tukey's post hoc test, with significance set at p<0.05. **Results:** A dose- and time-dependent response was observed for both genes. In DU4475 cells, there was a significant reduction in SMYD3 expression from 20 µg/mL, particularly at 48 hours and 72 hours (p<0.01). For SMYD2, a progressive decrease in expression was noted in MCF7 cells at concentrations above 15 µg/mL after 72 hours (p<0.05). In DU4475, SMYD2 expression showed a slight reduction, though not statistically significant at lower doses. **Conclusion:** Ozone demonstrated the ability to modulate SMYD2 and SMYD3 gene expression in a dose- and time-dependent manner, suggesting a possible differential epigenetic effect between the cell subtypes. These findings support the potential of ozone therapy as an adjuvant strategy in breast cancer treatment.

Keywords: breast neoplasms; ozone; genomic instability.

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Use of the CanRisk tool in risk prediction in patients with breast and/or ovarian cancer: a Brazilian reality?

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Introduction: Predictive tools based on mathematical and genetic models, such as CanRisk, which is based on the Breast and Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm (BOADICEA) model, have stood out for their ability to estimate the probability of developing these types of cancer in a personalized way. **Objective:** To estimate the absolute and relative risk of an individual developing breast and ovarian cancer over lifetime using the CanRisk tool, comparing the percentage risk with the genetic result. **Methods:** CanRisk was applied to 22 breast cancer patients and 21 ovarian cancer patients from the Goiás Todo Rosa Project, with a positive germline panel. After CanRisk was applied during pre-counseling, data were analyzed using the application's own risk calculator. The estimated risk values were classified according to the National Institute for Health and Care Excellence (NICE) criteria. **Results:** For patients with breast cancer, data showed that the estimated lifetime risks (20–80 years) ranged from 5.9% to 12.9%, with an average of 9.77%, classified as low risk of presenting genetic mutations or developing cancer. Data from 21 patients diagnosed with ovarian cancer presented estimated risks ranging from 0.9% to 2.3%. The values obtained were concentrated in the low-risk range, with three patients below the average (<1%) and none above 2.5%. **Conclusion:** CanRisk did not prove to be a valuable tool for estimating individual risk of breast and ovarian cancer. However, the results reinforce that its accuracy may be limited by the quality and comprehensiveness of the data entered. Although all patients had confirmed mutations in BRCA1/2, the CanRisk model did not classify them as high risk, which suggests that there is no need to use this tool in Brazil.

Keywords: breast cancer; BRCA1 protein; BRCA2 protein.

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Breast cancer in women older than those advised for mammographic screening in a public hospital in the Federal District

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Objective: To evaluate the clinical-epidemiological profile of women diagnosed with breast cancer after 70 years of age in a public hospital in the Federal District. **Methods:** This is a cross-sectional, retrospective study that analyzed 169 women diagnosed with breast cancer at the Hospital Regional da Asa Norte, from January 2021 to July 2024. Data were assessed by using SAS 9.4 on the TrakCare platform, in absolute and percentage frequency. Of these, 32 met the inclusion criteria. **Results:** The patients' mean age was 77.28, standard deviation ± 4.51 years. The mean age at menarche was 11.76 ± 1.48 , and at menopause, 48.60 ± 2.99 years. Regarding race, 20 (62%) women considered themselves brown, 9 (28%) white, and 2 (6%) black. The most prevalent comorbidity found was systemic arterial hypertension, in 22 (68%), followed by diabetes mellitus, in 13 (40%) patients. Regarding parity, the median was three pregnancies, with a quartile range of 3 ± 2 . Most of the women, 26 (81%), breastfed for at least six months. Family history was negative for the majority, 22 (68%), and only 5 (16%) underwent hormone replacement therapy. Only 10 (32%) reported smoking. The most prevalent histological type of cancer was invasive ductal carcinoma, found in 29 (91%) patients, and the molecular subtype was luminal A, present in 20 (62%) cases. Stage II was the most prevalent, 13 (40%), followed by stage III, 9 (28%). Surgical treatment was the most prevalent, with an equal distribution between conservative and radical surgery. Immediate breast reconstruction was performed in only 3 women (9.37%). **Conclusion:** Considering the aging of the Brazilian population and the increasing rates of breast cancer diagnoses in women over 70 years, it is concluded that mammographic screening in this age group should not be neglected, as it allows early diagnosis and curative treatment. Screening guidelines should not be limited to chronological age.

Keywords: breast cancer; clinical epidemiology; mammography.

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Analysis of axillary lymph node response to neoadjuvant therapy in young breast cancer patients (≤ 40 years) treated at Dr. Arnaldo Cancer Institute in São Paulo

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Objective: To describe pathological complete response rates in axillary lymph nodes after neoadjuvant therapy in young breast cancer patients (≤ 40 years) and correlate with molecular subtypes. **Methods:** This study analyzed patients ≤ 40 years treated at a cancer center in São Paulo from August 2018 to July 2023. Collected data included molecular subtype (luminal-like, human epidermal growth factor receptor-type 2-positive [HER2+], triple negative [TN]), axillary response (ypN0 vs. ypN+), and survival outcomes. Statistical analysis used descriptive methods of cN+ patients and their response to neoadjuvant therapy followed by surgery. The ethics committee at Dr. Arnaldo Cancer Institute approved this work.

Results: Fifty young patients with breast cancer were included (median age 35.5 years), of whom 26 (52%) had clinically positive axillary involvement (cN+) before treatment. After neoadjuvant therapy, it was observed that 40% (10/26) of cN+ patients achieved pathological complete response in axilla (ypN0). The ypN0 rates varied significantly among subtypes: HER2+ in 62% (8/13); TN in 38% (5/13); and luminal in 23% (6/26). Of the cN+ patients, 60% (16/26) remained ypN+, with 77% being luminal subtype. Regarding surgical approach, 44% (11/26) underwent axillary lymph node dissection. Among those achieving ypN0, only 20% (2/10) required dissection. **Conclusion:** HER2+ tumors showed the highest ypN0 rate (54%), while TN had the worst prognosis (60% of deaths). Complete axillary response correlates with a better prognosis, especially in HER2+. TN requires aggressive multimodal approach due to high progression rates. The findings support axillary treatment individualization based on subtype and response to neoadjuvant therapy.

Keywords: breast cancer; neoadjuvant therapy.

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GSK343 and EZH2: epigenetic modulation in breast tumor cells

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Introduction: The enzyme enhancer of zeste homolog 2 (EZH2), a catalytic component of the polycomb repressive complex 2 (PRC2), is associated with transcriptional repression of tumor suppressor genes and the progression of various cancer types, including breast cancer. **Objective:** This study aimed to evaluate the expression levels of the EZH2 gene in two breast cancer cell lines—MDA-MB-134 (luminal) and HTB-123 (triple negative)—treated with different concentrations of the selective EZH2 inhibitor, GSK343. **Methods:** Cells were cultured under standardized conditions (37°C, 5% CO₂) and treated with GSK343 at established concentrations (1, 5, 15, 30, and 60 µM) for 24, 48, and 72 hours. After the exposure periods, total ribonucleic acid (RNA) was extracted and complementary deoxyribonucleic acid (cDNA) synthesized. EZH2 gene expression was quantified by reverse transcription-quantitative polymerase chain reaction (RT-qPCR), using housekeeping genes for data normalization. Statistical evaluation was performed using analysis of variance (ANOVA) with Tukey's post hoc test, with $p < 0.05$ considered statistically significant. **Results:** The results revealed a dose-dependent reduction in EZH2 expression, particularly at concentrations of 15 µM and above. In the HTB-123 cell line, inhibition was more pronounced starting at 30 µM, with a significant decrease after 48 hours and more marked after 72 hours ($p < 0.01$). In MDA-MB-134, the response occurred earlier, with significant reductions already observed at 15 µM after 24 hours ($p < 0.05$), indicating greater sensitivity to the inhibitor. **Conclusion:** GSK343 is effective in negatively modulating EZH2 expression in breast cancer cells of different subtypes, with effects dependent on dose and exposure time, reinforcing its potential as an epigenetic agent in antitumor therapeutic strategies.

Keywords: breast neoplasms; genomic instability.

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Vitamin A deficiency and its association with tumor characteristics in breast cancer patients

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Introduction: Breast cancer is the most common cancer among women worldwide, yet there is limited literature on the effects of vitamin A in breast cancer patients. **Objective:** This study investigated the correlation between vitamin A deficiency and tumor characteristics. **Methods:** This prospective study included 50 newly diagnosed breast cancer patients who had undergone primary surgery. Universal sampling was used. The analyses were based on estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor-type 2 (HER2) status, along with vitamin A levels ($\mu\text{g}/\text{dL}$). Statistical analyses included t-tests and chi-square tests. The study was approved by the research ethics committee. **Results:** The mean age was 54.6 years, standard deviation ± 12.2 , and the mean vitamin A level was 32.2 ± 18.1 $\mu\text{g}/\text{L}$. ER was positive in 76%, PR in 68%, HER2 in 8%, and triple-negative breast cancer (TNBC) in 20%. ER-positive cases had higher vitamin A levels (37.2 $\mu\text{g}/\text{L}$) than ER-negative cases (16.6 $\mu\text{g}/\text{L}$), $p < 0.0001$. PR-positive cases also had elevated vitamin A levels (36.9 $\mu\text{g}/\text{L}$) compared to PR-negative cases (22.3 $\mu\text{g}/\text{L}$), $p < 0.006$. No significant difference was found between HER2-positive (40.3 $\mu\text{g}/\text{L}$) and HER2-negative (30.7 $\mu\text{g}/\text{L}$) cases, $p < 0.174$. TNBC cases had lower vitamin A levels (16.8 $\mu\text{g}/\text{L}$) than non-TNBC cases (36.1 $\mu\text{g}/\text{L}$), $p < 0.002$. **Conclusion:** Vitamin A levels are significantly associated with breast cancer subtypes, being higher in ER- and PR-positive cases and lower in TNBC. These findings suggest vitamin A status may influence prognosis and warrant further investigation into its therapeutic role in breast cancer management.

Keywords: breast neoplasms; vitamin A; estrogen receptor; progesterone; triple-negative breast neoplasms.

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Epidemiology of male breast cancer in Brazil

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Introduction: Male breast cancer is a rare disease, accounting for less than 1% of all breast cancer cases. In Brazil, data on its epidemiology and treatment patterns remain limited. **Objectives:** This study aimed to analyze the clinical and epidemiological characteristics of male breast cancer patients diagnosed in Brazil between 2000 and 2022. **Methods:** Data were extracted from the Brazilian Hospital Cancer Registries via the National Cancer Institute (INCA) database, covering 239 cancer centers across all regions. Variables analyzed included age, race, education, tumor characteristics, clinical stage, histology, treatment modalities, and geographic disparities. Only microscopically confirmed in situ and invasive tumors (ICD-10 C50) were included; non-epithelial neoplasms were excluded. Data analysis was conducted using R software. **Results:** A total of 4,918 cases of male breast cancer were identified. The highest number of cases occurred between 2015 and 2019. The mean age at diagnosis was above 60, with 75.7% of patients aged ≥ 50 years. Most were white (38.7%) or brown (30%), and 43% had ≤ 8 years of schooling. Southeast and Northeast accounted for the majority of cases. Tumor staging revealed a predominance of stage II (26.6%) and stage III (24.3%) disease. The most frequent tumor location was in the upper outer quadrant. Surgery was the most common initial treatment, followed by chemotherapy, radiotherapy, and hormone therapy. Only 3% of patients received no oncological treatment. A significant proportion of patients (60.8%) traveled to another city for treatment. **Conclusion:** This study presents one of the most comprehensive national overviews of male breast cancer in Brazil, revealing significant disparities in diagnosis and access to care. The data highlight the need for improved awareness and earlier detection. Further research is crucial to support evidence-based care for this underserved population.

Keywords: male breast neoplasms; clinical epidemiology; Brazil.

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Inflammatory breast carcinoma: prognostic factors associated with survival in a tertiary hospital in Central-West Brazil

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Objectives: The primary objective of this study was to identify factors associated with survival in patients with inflammatory breast cancer undergoing surgical treatment at the Hospital de Base do Distrito Federal. Our secondary objectives were to define the epidemiological and clinical profile of these patients, evaluate the pathological staging, identify the rate of locoregional and distant recurrences, deaths, and estimate disease-free survival and overall survival. **Methods:** A retrospective cohort study was performed with 68 patients treated between 2013 and 2023. Analyses included Cox regression to determine factors associated with recurrence and mortality, using the hazard ratio as a measure of effect, and Kaplan-Meier curves to assess survival, considering $p < 0.05$ as statistically significant. **Results:** The median age of patients was 50.5 years, with 47% under 50 years. The most prevalent tumor subtype was triple negative (39.7%), and the most common clinical staging was IIIB N1 (48.5%). The pathological complete response rate was 22.0%. The median follow-up was 1.4 years; locoregional recurrence occurred in 22.0% of patients; 47.5% had distant recurrence; and mortality reached 47.06%. The median survival time was approximately 3.8 years, and the median disease-free time was approximately 2.0 years. Factors associated with a worse prognosis for overall survival and disease-free survival in the multivariate analysis included triple-negative tumor ($p = 0.001$ and $p = 0.020$, respectively), and axillary ypN2/N3 ($p < 0.001$ and $p < 0.001$, respectively). In univariate analysis, residual tumor size ($p = 0.0199$) and the presence of angiolymphatic invasion ($p = 0.0036$) were also associated with a worse prognosis. **Conclusion:** The study emphasizes the need for early and multidisciplinary treatment of inflammatory breast cancer. Better pathological response and locoregional control are crucial for prognosis, especially in the triple-negative subtype.

Keywords: inflammatory breast cancer (IBC); prognostic factors; survival analysis.

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Nipple-sparing mastectomy as a risk-reducing strategy in high-risk patients

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Objective: This study aimed to evaluate indications, complication rates, and unfavorable events in 106 patients undergoing risk-reducing nipple-sparing mastectomy (NSM) with immediate reconstruction over 20 years. **Methods:** A retrospective review was conducted of medical records and updated patient follow-ups during routine appointments. Patients who underwent risk-reducing NSM from 2004 to 2024 were included. **Results:** The patients' mean age was 42.8 years, with 74.5% under 50. The main indication for risk-reducing NSM was the presence of a genetic mutation (61.3%), predominantly BRCA (52%), followed by a family history of breast cancer (38.6%). All patients received silicone implant-based reconstruction. There was one (1%) incidental diagnosis of invasive ductal carcinoma and three (2.8%) ductal carcinomas in situ. Among 212 risk-reducing NSM, complication rates were low, with partial nipple necrosis, infection, and seroma needing drainage, each occurring in approximately 1% of cases. With a mean follow-up of 52 months, only one (1%) patient developed breast cancer. **Conclusion:** These findings highlight the safety and effectiveness of NSM as a risk-reducing strategy, supporting its role in precision surgical oncology for high-risk patients.

Keywords: subcutaneous mastectomy; postoperative complications; breast neoplasms.

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Effects of the hypomethylating agent 5-aza-2'-deoxycytidine on SMYD2 and SMYD3 expression in MCF7 and BT474 cells

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Introduction: The epigenetic genes SMYD2 and SMYD3, part of the lysine methyltransferase family, play crucial roles in gene expression regulation, cell proliferation, and cancer progression, particularly in breast cancer. Dysregulation of these genes has been linked to aggressive tumor phenotypes, making them promising targets for therapeutic interventions. **Objective:** This study aimed to evaluate the modulatory effects of the hypomethylating agent 5-aza-2'-deoxycytidine (5-aza-dC) on the expression levels of SMYD2 and SMYD3 in luminal A (MCF7) and luminal B (BT474) breast cancer cell lines treated at different concentrations. **Methods:** Cells were cultured in DMEM and RPMI media, respectively, and treated with varying concentrations of 5-aza-dC (10, 20, 30, and 50 μM) for 24, 48, and 72 hours. After each time point, ribonucleic acid (RNA) was extracted, complementary deoxyribonucleic acid (cDNA) synthesized, and gene expression quantified via reverse transcription-quantitative polymerase chain reaction (RT-qPCR), using reference genes for normalization. Data were assessed using analysis of variance (ANOVA) followed by Tukey's post hoc test, with $p < 0.05$ considered significant. **Results:** The experiments revealed dose- and time-dependent modulation. In MCF7, a significant reduction in SMYD3 expression was observed from 30 μM , especially after 48 hours and 72 hours ($p < 0.01$). In BT474, SMYD2 expression showed a significant decrease at 50 μM after 72 hours ($p < 0.05$), while SMYD3 was also repressed at all doses from 48 hours onward, with the most prominent effects at 30 μM and 50 μM ($p < 0.01$). **Conclusion:** Treatment with 5-aza-dC significantly downregulated SMYD2 and SMYD3 expression, suggesting that epigenetic modulation may be an effective pathway for controlling these genes in breast cancer cells. These findings reinforce the potential of epigenetic therapy in antitumor strategies.

Keywords: breast neoplasms; epigenetic.

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National survey on attitudes of Brazilian breast surgeons regarding oncoplastic surgery: success of a training model

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Introduction: Historically, breast reconstruction was performed by plastic surgeons. The Brazilian Society of Mastology implemented initiatives designed to improve breast surgeons’ training in oncoplastic techniques; however, the current proportion of surgeons performing these techniques remained unknown. **Objective:** This study aimed to determine the proportion of Brazilian breast surgeons performing oncoplastic surgery, their previous training, the complexity of procedures performed, and factors influencing the adoption of techniques. **Methods:** In this survey, a structured questionnaire was sent to all Brazilian Society of Mastology-affiliated breast surgeons between July and December 2023. Outcome proportions were estimated using binomial distribution. Adjusted proportion ratios (aPR) were calculated using robust Poisson regression. **Results:** A 60.2% valid response rate was achieved (n=1,059/1,759). Almost half of the respondents performed oncoplastic surgery, with most being young (<40 years) (aPR 1.66; 1.31–1.10; p<0.001); male (aPR 1.39; 1.22–1.59; p<0.001); Southern resident (aPR 1.39; 1.18–1.63; p<0.001); with a specialist degree in breast disease (aPR 1.19; 1.00–1.42; p<0.004); primarily trained in general surgery (aPR 1.32; 1.16–1.51; p<0.001) and secondarily in breast surgery (aPR 1.41; 1.08–1.85; p=0.01); and performing >100 surgeries/year (aPR 1.72; 1.49–1.99; p<0.001). The techniques most commonly mastered were simple displacement (88.7%), therapeutic mastoplasty or contralateral symmetrization (96.4%), reconstruction with implants or tissue expanders (93.6%), extreme oncoplasty (81%), skin and nipple-sparing (99%), skin-reducing mastectomy (84.2%), and thoracoabdominal flaps (71.7%). **Conclusion:** A high proportion of Brazilian mastologists perform oncoplastic surgery, which ultimately may benefit breast cancer patients, increasing the rate of breast-conserving surgery and breast reconstruction, particularly in locations where resources are sparse. These data may encourage the development of strategies aimed at improving medical education in this field and in other countries.

Keywords: breast cancer; mastectomy; segmental mastectomy; subcutaneous mastectomy; mastoplasty; breast implantation; breast reconstruction; questionnaires; survey.

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Epidemiological and immunohistochemical analysis of young women with breast cancer in a public hospital of the Unified Health System of the Federal District

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Objective: To outline the epidemiological and immunohistochemical profile of young women with breast cancer treated at a hospital of the Brazilian Unified Health System. **Methods:** This is a cross-sectional, retrospective study that analyzed women with breast cancer under 40 years of age in a public hospital in the Federal District from January 2017 to January 2023, using the Trakcare[®] platform. The study was approved by the ethics committee (CAAE: 66697522300005553; Opinion 5907638). **Results:** Of 383 women with breast cancer, 62 (16%) were under 40 years of age. Among them, 2.3% were aged 20–24 years, 7.2% were between 25–29 years, 32.3% were 30–34 years, and 58.1% were 35–39 years. The subjects were 46.2% brown, 27.6% white, and 9.5% black. Regarding parity, 21% were nulliparous and 79% had one or more pregnancies. The mean age at menarche was 13 years. Approximately 36.7% used oral hormonal contraception; 19% had a positive family history for breast cancer; 8.1% were smokers; and 12.9% were alcoholics. The histopathological results in 38 (61.29%) patients were infiltrating ductal carcinoma, infiltrating lobular carcinoma in 14 (22.58%), and ductal in situ in 10 (16.12%). The most prevalent molecular subtype was luminal B in 19 (30.64%) patients and non-basal triple negative in 18 (29.03%), followed by luminal A in 13 (20.96%), human epidermal growth factor receptor-type 2 (HER2) in 7 (11.29%), and hybrid luminal in 5 (8.06%). **Conclusion:** Young women with breast cancer had a median age of 35 years. Those with a positive family history and who used combined hormonal contraceptives had a higher incidence of the disease. Non-specific invasive carcinoma, luminal B, and triple negative predominated, attesting to the higher prevalence of more aggressive tumors. The analysis outlined the profile of young women who deserve attention regarding early screening for breast cancer.

Keywords: breast cancer; clinical epidemiology; immunohistochemistry.

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Evaluation of the recurrence rate of breast cancer after surgery in tertiary hospital from the Federal District

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Objective: To evaluate recurrences related to breast surgery for adenectomy in the mastology sector of the tertiary hospital in the Federal District, from June 2013 to June 2020. **Methods:** This is an observational, descriptive, retrospective study with data collection from selected patient records. **Results:** Sixty-one patients who underwent adenectomy were considered; four were excluded because they did not meet the inclusion criteria. The most common age groups were between 50–59 years (35.1%), followed by 40–49 years (26.3%), and 30–39 years (19.3%). The most common body mass index among patients was between 20–25 kg/m². In the group of patients who underwent the procedure and had recurrence, the average age was 39.3 years. Of the 57 patients evaluated in the study, six presented recurrence: one (1.8%) presented local, one (1.8%) patient had recurrence in the NAC, two (3.5%) had local + regional recurrence, and two (3.5%) presented distant metastasis. Pre-menopause (50%) was the most frequent status in the recurrence group. Ductal histological type was related to all cases of recurrence. T1c and T3 and histological grade II were the prevalent characteristics. The tumor subtypes luminal B (ki-67>14; 50%) and luminal B with human epidermal growth factor receptor-type 2-positive (HER2+) (ki67>15%; 33.3%) were the predominant subtypes. The most frequent reason for adenectomy was multicentric/multifocal disease (33.3%), the majority, radiated in the lateral upper quadrant (66.7%), was the type of incision related to recurrence. **Conclusion:** Adenectomy offers comprehensive treatment of breast injuries, with favorable aesthetic outcomes. The overall recurrence rate in the present study was 9.5%. The local recurrence rate was 1.8%, which is consistent with those found in the literature, e.g., with rates of 1.6% and 2.9% after 5 years of study.

Keywords: breast neoplasms; surgery.

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Delays in the initiation of breast cancer treatment in Brazil: an analysis by age and region

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Introduction: Breast cancer is the most prevalent malignancy among women in Brazil. **Objective:** This study aimed to identify the regions and age groups most affected by delays in the initiation of breast cancer treatment and to assess the potential clinical consequences of such delays on patient outcomes. **Methods:** Data were collected from the Department of Informatics of the Unified Health System (DATASUS) platform, which provided information on the date of diagnostic examination, date of first treatment, regions, and age groups of patients. According to guidelines from recent cancer committees, the optimal time to initiate oncological treatment is within 60 days of the diagnostic examination. Consequently, delay in treatment initiation was defined as any interval exceeding 60 days from the diagnostic exam. **Results:** In 2024, a total of 53,401 breast cancer patients initiated treatment, with 31.5% (n=16,830) experiencing delays in treatment commencement. The Central-West region exhibited the highest delay rate, with 39.9% (n=1,190) of cases, followed by the North region with 34.0% (n=735). Among the age groups, patients aged 65–69 years experienced the highest treatment delay, with a 35.1% (n=2,038) rate. Delays in initiating breast cancer treatment can result in a range of clinical consequences, which may vary according to the tumor's grade and histological type. However, studies consistently demonstrate that delayed treatment is associated with an increased risk of metastasis, local disease progression, and decreased survival rates. **Conclusion:** These findings underscore the critical importance of initiating treatment as early as possible for the progression of the disease, highlighting that regional and social disparities significantly influence the timing of treatment initiation. Further in-depth studies are necessary to better understand the underlying causes of these disparities reflected in the statistics.

Keywords: breast neoplasms; treatment delay.

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Artificial Intelligence-driven analysis of local recurrence factors in nipple-sparing mastectomy for invasive tumor patients

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Objective: To apply a machine learning algorithm to identify risk factors for local recurrence after nipple-sparing mastectomy (NSM) with immediate reconstruction in a Brazilian breast cancer cohort. **Methods:** A machine learning algorithm was employed to classify features associated with local recurrence following NSM and immediate breast reconstruction for invasive tumors. Specifically, the XGBoost algorithm, a tree-based machine learning technique, was implemented, and the SHAP method was used to interpret the prediction outcomes of the model. **Results:** The dataset comprised clinicopathological characteristics, surgical details, and outcome data from 299 breast cancer patients who underwent NSM for invasive tumor treatment. The mean follow-up of patients was 42.3 months (2001–2020). The XGBoost algorithm achieved an average accuracy of 95% in classifying patients into those who experienced local recurrence and those who remained disease-free. SHAP analysis identified the risk factors that most contributed to the prediction of local recurrence in the algorithm, including large tumors, young age, negative progesterone receptor, not undergoing radiotherapy and chemotherapy, positive lymph nodes, and tumor high grade. Additional factors, such as pre-menopausal status, history of previous breast cancer, lobular and metaplastic tumor types, and adjuvant rather than neoadjuvant treatment, also influenced the model, though to a lesser extent. **Conclusion:** These preliminary findings enhance the understanding of the mechanisms underlying local recurrence after NSM in patients with invasive tumors, demonstrating the potential of the XGBoost algorithm to personalize breast cancer treatment.

Keywords: breast neoplasms; machine learning; subcutaneous mastectomy.

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Artificial intelligence and machine learning for breast cancer recurrence prediction: a data-centric approach

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Introduction: Breast cancer recurrence remains a significant clinical challenge, particularly in resource-constrained environments where long-term patient monitoring is often limited. **Objective:** Leveraging recent advances in artificial intelligence and machine learning, this study proposes a data-driven methodology to predict recurrence in breast cancer patients based on clinical and histopathological data extracted from electronic medical records. **Methods:** Through the development of a structured data processing pipeline, unstructured medical records were transformed into a high-quality dataset suitable for predictive modeling. The study introduced a stratified modeling approach, beginning with unsupervised clustering to identify distinct patient subgroups based on tumor aggressiveness. Supervised learning models were subsequently applied to each group, aiming to tailor predictions according to subgroup-specific characteristics. In parallel, survival analysis methods were employed to enhance interpretability and assess long-term outcomes. The ethics committee at Dr. Arnaldo Cancer Institute approved this study. **Results:** The models developed demonstrated promising performance in predicting recurrence, with results supporting the clinical applicability of the proposed stratified modeling approach. Notably, the integration of survival analysis enhanced the interpretability of predictions, allowing the identification of patterns related to long-term outcomes. **Conclusion:** These findings highlight the potential of artificial intelligence-driven tools to support clinical decision-making and personalized follow-up strategies for breast cancer patients. Ongoing work includes expanding validation across multiple institutions and exploring the integration of molecular biomarkers and advanced deep learning techniques.

Keywords: breast neoplasms; artificial intelligence; machine learning; survival analysis; medical oncology.

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Lipofilled mini dorsi flap: an alternative for breast reconstruction

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Introduction: The lipofilled mini dorsi flap has emerged as a novel breast reconstruction technique that utilizes a portion of the latissimus dorsi muscle combined with lipofilling to achieve a breast reconstruction with a more natural aesthetic outcome. **Objective:** This is a systematic review conducted to synthesize the most relevant data on this surgical technique and compile its main outcomes. **Methods:** The search was carried out on the databases PubMed, Embase, Scopus, ScienceDirect, and Web of Science. The search strategy was designed using the descriptor: “lipofilled mini dorsi flap”. **Results:** Of the ten initial studies, after duplicate removal and screening, two were included. A total of 106 patients were assessed, of whom 59 underwent immediate reconstruction and 47 underwent implant replacement: 32 replacing prostheses and 15 replacing tissue expanders. Among patients who underwent immediate reconstruction, one case of hematoma and one of necrosis were reported, with no occurrences of infection. In the implant replacement group, no cases of hematoma, necrosis, or infection were observed. Regarding patient satisfaction, those in the immediate reconstruction group reported outcomes as very satisfactory (n=25) and satisfactory (n=34), while those in the implant replacement group reported very good (n=18), good (n=20), and average (n=4), with 42 patients stating that they experienced the sensation of having a real breast. **Conclusion:** The lipofilled mini dorsi flap technique is a viable, efficient approach with a broad range of applications. The results demonstrated long-lasting outcomes with natural appearance, without functional muscle loss associated with other musculocutaneous flaps. The technique proved effective for both single-stage immediate reconstruction and implant replacement (including prostheses and expanders), making it a feasible alternative for both procedures.

Keywords: mammoplasty; myocutaneous flap.

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The impact of the COVID-19 pandemic on the navigation, diagnosis, and treatment of breast cancer patients: assessment of pre- and pandemic results

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Introduction: Breast cancer is sensitive to mammographic screening and the organization of the health system, a fact that influences staging at diagnosis. During the COVID-19 pandemic, diagnosis was compromised, with changes in patient navigation and treatment. **Objective:** The aim of this study was to compare the changes determined by the pandemic in an oncology hospital. **Methods:** This retrospective study, carried out in a tertiary oncology hospital, evaluated exclusively patients from the Unified Health System (SUS). It was approved by the regional research ethics committee (CAAE 69791523.9.0000.5105). The patients were divided into two periods of 18 months, before and during the pandemic. Data on age range, presence of symptoms at diagnosis, molecular subtype, clinical pathological stage, clinical prognosis stage, type of first treatment, and surgical treatment performed were evaluated and compared. Chi-square test was used to compare between groups. Statistical analyses were performed using the IBM Statistical Package for Social Sciences (SPSS) program, version 20.0. **Results:** From July 2018 to December 2022, 460 patients were evaluated. The first treatment was surgery (59.8%), then chemotherapy (32.6%), hormone therapy (3.3%), and palliative care (4.3%). The main surgery was breast-conserving (79.2%), followed by mastectomy without reconstruction (15.0%) and with reconstruction (5.9%); where oncoplastic procedures occurred in 14.0% of the patients. Several changes were observed during the period ($p < 0.01$): (1) patients diagnosed by screening mammography (40.7% vs. 26.2%); (2) palpable tumor at diagnosis (64.7% vs. 73.1%); (3) age group 40–69 years (72.3% vs. 75.6%); (4) carcinoma in situ (10.9% vs. 5.0%); (5) clinical stage II (33.4% vs. 23.8%); (6) clinical stage III (20.1% vs. 30.0%); (7) oncoplastic quadrantectomy (4.1% vs. 15.5%); and (8) axillary lymphadenectomy (18.3% vs. 28.9%). **Conclusion:** In our oncology care region, the COVID-19 pandemic determined negative changes in the health system. Although SUS has limitations, worse tumors characteristics and treatment were observed, based on worse diagnostic flow and patient navigation.

Keywords: breast neoplasms; COVID-19; retrospective study; disease progression.

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Nipple-sparing mastectomy in young patients: evaluating oncologic efficacy and prophylactic benefits

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Objective: To evaluate the indications, complication rates, and outcomes of very young breast cancer patients undergoing nipple-sparing mastectomy (NSM). **Methods:** This is a retrospective review of medical records and updated patient follow-ups during routine appointments. Thirty breast cancer patients aged <30 years who underwent NSM with immediate breast reconstruction were assessed, between January 2007 and December 2024. **Results:** Indications for NSM included early breast cancer (n=18), ipsilateral recurrence (n=1), compromised margins after previous surgery (n=1), and risk reduction (n=10). Notably, 90% underwent bilateral surgery. In risk-reducing cases, seven patients carried BRCA mutations, one had a p53 mutation, and two had a strong family history of breast cancer with breast atypia. Among therapeutic NSM, one patient was diagnosed with ductal carcinoma in situ, and 19 with invasive ductal carcinoma, being 42.1% luminal tumors, 5.3% luminal/ human epidermal growth factor receptor-type 2 (HER2), 21% HER2, and 31.6% triple negative. Neoadjuvant chemotherapy was given to 73.7% (n=14), with 42.8% (n=6) achieving a pathological complete response, while five patients received adjuvant chemotherapy, and 80% underwent radiotherapy. Out of 57 NSM performed, minor postoperative complications were observed, including one (1.7%) hematoma needing drainage and one (1.7%) infection. Over a mean follow-up of 45 months, no patients undergoing risk-reducing NSM developed breast cancer. Two patients in the therapeutic group experienced recurrence: one (5%) in the ipsilateral axilla and one (5%) in contralateral breast. The patient with contralateral recurrence did not receive bilateral NSM as part of treatment. **Conclusion:** These findings highlight the aggressive nature of breast cancer in very young patients, suggesting that combining neoadjuvant chemotherapy with NSM seems to be an effective strategy for very young patients. Additionally, NSM demonstrated promising risk reduction outcomes in this high-risk group.

Keywords: subcutaneous mastectomy; postoperative complications; breast neoplasms; recurrence.

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Invasive ductal breast cancer in Brazil: comparative epidemiological analysis between Goiás and other Brazilian states (2013–2025)

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Introduction: Breast cancer is the most incident cancer among women after non-melanoma skin cancer, with invasive ductal carcinoma being its most common subtype. **Objective:** To analyze, from an epidemiological and comparative perspective, the incidence of invasive ductal breast cancer in Goiás compared to other Brazilian states in a given period. **Methods:** The study used a descriptive analysis of data collected through TABNET (an application from DATASUS), considering the period from 2013 to 2025 and covering the 27 federative units of Brazil. Based on this data, the total number of cases of invasive ductal breast cancer in the Brazilian states and the Federal District was quantified, allowing a comparison of the annual incidence between Goiás and the rest of the country. **Results:** In Goiás, 6,643 cases of invasive ductal breast cancer were confirmed between 2013 and 2025, representing around 7.50% of the 87,668 cases recorded in Brazil in the same period. The epidemiological analysis revealed a gradual increase in incidence in the state, from just one case (1.10%) of the 90 recorded in the country in 2013, to 557 cases (30.36%) out of a total of 1,380 recorded nationwide by the time of the study in 2025. In 2024, incidence peaked in Goiás, with 3,975 cases, corresponding to 24.97% of the national total. Goiás is the sixth state with the most records of invasive ductal breast cancer in the period analyzed, behind only Minas Gerais, Pernambuco, Paraná, São Paulo, and Bahia, states with larger populations. **Conclusion:** The increase in incidence can be attributed to advances in screening and diagnosis, as well as greater exposure to risk factors such as obesity and the use of hormones. In addition, awareness and health campaigns in Goiás have intensified, favoring the identification of new cases.

Keywords: breast neoplasms; epidemiology; incidence.

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Hemoglobin and bone metastasis risk in breast cancer: a prognostic perspective

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Introduction: Bone is the most common site of breast cancer metastasis, but prognostic factors remain controversial. **Objective:** This study examined the association between hemoglobin (Hb) levels and bone metastasis (BM) risk. **Methods:** This retrospective study evaluated 260 breast cancer patients, between 2021–2023, analyzing age, clinical stage (IIIa, IIIb, IIIc), estrogen receptor (ER), progesterone receptor (PR), human epidermal growth factor receptor-type 2 (HER2) status, and Hb levels. Groups were divided into those with and without BM. Treatments included surgery, chemotherapy, radiotherapy, and hormonal blockade for ER/PR-positive cases. HER2 3+ patients received trastuzumab. Statistical analyses included t-tests and chi-square tests. The study was approved by the research ethics committee. **Results:** The mean age was 61.3 years, standard deviation ± 9.7 , and mean Hb was 12.3 ± 1.17 g/dL. ER was positive in 71.5% of patients, PR in 59.6%, and HER2 in 25.8%. Clinical stages IIIa, IIIb, and IIIc were observed in 50.8%, 33.5%, and 15.7%, respectively. BM was identified in 17.3% of cases. Among stage IIIa, IIIb, and IIIc, BM occurred in 22.7%, 10.3%, and 14.6%, respectively ($p > 0.067$). BM was found in 16.1% of ER-positive vs. 20.3% of ER-negative patients ($p > 0.468$). PR and HER2 status showed no significant relationship with BM ($p > 0.508$; $p > 0.708$). However, Hb levels were significantly lower in BM patients (11.7 g/dL) than in those without (12.5 g/dL; $p < 0.0001$). **Conclusion:** Lower Hb levels may be linked to higher BM risk in breast cancer patients and could serve as a prognostic marker, requiring further investigation.

Keywords: hemoglobin; breast neoplasms; neoplasm metastasis; radiotherapy.

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Evaluation of lymph nodes in women undergoing neoadjuvant chemotherapy in the treatment of breast cancer

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Objective: To evaluate the impact of neoadjuvant chemotherapy on the surgical management of axillary lymph nodes, focusing on the feasibility of more conservative interventions. **Methods:** This observational, analytical, and cross-sectional study analyzed the medical records of 172 women diagnosed with breast cancer at the Regional Hospital of Asa Norte, between June 2021 and August 2024. Among them, 21 met the inclusion criteria. The study was submitted and approved by the ethics committee (CAAE: 85735824600005553; Opinion: 7429411). **Results:** The mean age of the participants was 52.8 years. Breast involvement was evenly distributed between the right and left sides (47.62% each), while 4.76% had bilateral involvement. The most prevalent molecular subtype was luminal B (33.33%), followed by human epidermal growth factor receptor-type 2-positive (HER2+) (28.57%), triple negative (19.04%), and luminal A (14.28%). The average tumor size was 3.7 cm, being the most common (57.14%), with tumors measuring from 2.1 to 3.0 cm. Axillary staging showed 52.38% with negative nodes and 47.62% with positive nodes. Partial response to chemotherapy was the most frequent outcome (42.86%), while 23.81% achieved pathological complete response and 33.33% showed no response. Surgically, 66.67% underwent mastectomy and 33.33% underwent conservative surgery. Sentinel lymph node biopsy was the predominant axillary approach (57.14%), while 42.86% required lymphadenectomy. Clear margins were observed in 90.48% of cases. The mean number of evaluated lymph nodes was 10.33, with an average of 3.28 positive nodes. **Conclusion:** Neoadjuvant chemotherapy contributed to reducing lymph node involvement, enabling more conservative surgical techniques, such as sentinel lymph node biopsy, with lower morbidity. Therefore, personalized treatment, considering tumor profile and therapeutic response, is essential to improve clinical outcomes and patients' quality of life.

Keywords: breast cancer; neoadjuvant chemotherapy; sentinel lymph node; lymphadenectomy; pathologic complete response.

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Gene modulation by ozone: Aurora kinases A and B in the context of breast carcinoma

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Introduction: The Aurora kinases A (AURKA) and B (AURKB) are crucial regulatory enzymes of the cell cycle and mitosis, frequently overexpressed in various types of cancer, including breast cancer. **Objective:** Given the growing investigation into the therapeutic potential of medical ozone in oncological settings, this study aimed to evaluate the effects of different ozone concentrations on the expression of AURKA and AURKB genes in breast cancer cell lines. **Methods:** MDA-MB-134 (luminal B) and HTB-123 (triple-negative) cells were cultured under controlled conditions (37°C, 5% CO₂) and treated with ozone doses (10, 15, 20, 30, and 40 µg/mL) via gas exposure in culture medium for 45 minutes. After established time points (48 hours and 72 hours), total ribonucleic acid (RNA) was extracted and complementary deoxyribonucleic acid (cDNA) was synthesized. Gene expression quantification was performed by reverse transcription-quantitative polymerase chain reaction (RT-qPCR), normalized using validated reference genes. Statistical evaluation was conducted using analysis of variance (ANOVA) followed by Tukey's post hoc test, with significance set at p<0.05. **Results:** A significant reduction in AURKA expression was observed in both cell lines starting at 30.0 µg/mL, with HTB-123 showing greater sensitivity to the 40µg/mL dose after 72 hours (p<0.01). For AURKB, a more pronounced dose-dependent response was observed in MDA-MB-134, with a statistically significant decrease from 15 µg/mL, especially after 72 hours (p<0.05). **Conclusion:** Treatment with increasing doses of ozone negatively modulates AURKA and AURKB expression, demonstrating a potential antitumor effect associated with cell cycle regulation. These findings contribute to the understanding of ozone's role as an adjuvant agent in breast cancer therapy, with differential impact on distinct molecular subtypes.

Keywords: breast neoplasms; ozone; genomic instability; AURKA.

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Effect of resistance training on the phase angle of breast cancer patients during neoadjuvant chemotherapy: a pilot study

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Objective: This pilot study aimed to evaluate the impact of resistance training (RT) on phase angle (PhA) in breast cancer patients undergoing neoadjuvant chemotherapy. **Methods:** Five women with breast cancer (stages I–III) were recruited before chemotherapy and randomized into RT (n=3) and control (CON, n=2) groups. The RT protocol lasted 12 weeks, with weekly sessions including 3–4 sets of 10–16 repetitions of exercises targeting major muscle groups, such as leg press, bench press, stiff-leg deadlift, and lat pulldown. PhA was assessed via bioelectrical impedance analysis at baseline and post-intervention. Statistical analysis was performed using the IBM Statistical Package for Social Sciences (SPSS; v. 25.0) and Jamovi (v. 2.3.28.0). The Shapiro-Wilk test assessed data normality. Group comparisons were conducted using an independent t-test, and PhA variations over time were analyzed with a two-way analysis of variance ANOVA (2×2). The study was approved by the ethics committee of the Federal University of Goiás. **Results:** No statistically significant PhA differences were found between RT and CON (p=0.241). Baseline values were 6.37 standard deviation ±0.50 (RT) and 6.3±0.28 (CON), while post-intervention values were 6.37±0.40 (RT) and 5.85±0.35 (CON). **Conclusion:** RT did not significantly impact PhA during neoadjuvant chemotherapy. However, considering the prognostic value of PhA, future studies should explore larger samples, longer interventions, and different training protocols.

Keywords: neoplasms; resistance training; body composition; therapeutics.

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Fibroadenoma in axillary accessory breast: a systematic review of the literature

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Introduction: Axillary accessory breast is a benign condition for which surgery is performed based on the patient's wish. However, accessory breast tissue may be affected by neoplasia, requiring diagnosis and resection. Fibroadenoma represents the main etiology. **Objective:** This study aimed to provide a better understanding of the imaging characteristics, differential diagnoses, and clinical and surgical treatment options for this pathology. **Methods:** A systematic literature review was conducted using the PICOS (patient/population, intervention, comparison, outcome, study design) and the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) methodologies to evaluate reported cases in the literature. The databases searched included PubMed and LILACS, without restrictions on date or language. The terms used were: ("Axilla" [Mesh] OR accessory breast) AND ("Fibroadenoma" [Mesh]). **Results:** The PubMed literature contained 45 articles, and LILACS contained one article (also presented in PubMed). The medical literature reported only 43 cases of fibroadenoma in the axillary accessory breast, and two more cases were added. Despite fibroadenoma being the most common benign breast neoplasm, fewer than 50 cases have been described in the literature regarding this condition. Due to its rarity, clinical suspicion is low, and imaging findings are atypical. This condition should be considered in the differential diagnosis of benign, malignant, or metastatic axillary pathologies. The patients underwent surgical resection of the accessory breasts. **Conclusion:** Conservative management of axillary accessory breast tissue is possible, although ectopic breasts may be affected by neoplasms. In cases of suspected malignancy, investigation follows the same clinical protocol used for breasts in normal anatomical positions, ensuring timely diagnosis. When fibroadenoma occurs in the accessory breast, careful observation is the safest approach and should be conducted in conjunction with the evaluation of the primary breast tissue.

Keywords: axilla; breast; fibroadenoma.

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Trends in mastectomy for early breast cancer in a public institution with limited access: a retrospective cohort

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Introduction: Breast-conserving surgery (BCS) is the preferred surgical treatment for early breast cancer. However, there has been an increase in mastectomies in developed countries in recent years. Not much is known, though, about this trend in breast healthcare in low- and middle-income countries. **Objective:** This study aimed to evaluate the rates of mastectomy, with or without immediate reconstruction, as well as BCS. **Methods:** This is a retrospective cohort study of patients who underwent surgery for non-metastatic breast cancer between 2012 and 2019 at the Hospital Geral de Fortaleza, an institution that exclusively treats patients from the Brazilian Unified Health System (SUS). The chi-square test, with Bonferroni adjustment, was applied to the relative frequencies of the procedures performed in order to test statistical significance in the evolution of surgery frequencies over the years. **Results:** A total of 805 patients underwent surgical treatment for non-metastatic breast cancer, with an average of 100 surgeries per year (range 85–118) during the study period. Mastectomy was performed in 552 cases (68.57%), while 253 patients underwent BCS (31.42%). Among the patients who underwent mastectomy, 181 (32.78%) had immediate reconstruction, with the highest proportion using implants (92.26%). No statistical difference was observed between mastectomies with or without reconstruction throughout the period ($p=0.6635$), with a statistically significant difference between BCS and mastectomies ($p=0.0428$). **Conclusion:** No increase in mastectomy rates, with and without immediate reconstruction, was observed over the years, but a trend towards an increase in BCS was identified. Further studies are needed to better understand this trend in settings with limited access to health care.

Keywords: breast neoplasm; mastectomy; subcutaneous mastectomy; partial mastectomy; breast reconstruction.

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Regional discrepancies between diagnosis and treatment start of breast cancer: a comparative analysis of DATASUS data in different Brazilian regions

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Objective: This study aimed to analyze data available in the Department of Informatics of the Unified Health System (DATASUS) regarding the number of breast cancer diagnoses compared to the starting time of treatments in different Brazilian regions. **Methods:** This is an observational, descriptive, and analytical study using secondary data from DATASUS platform, covering the period from 2019 to 2024, including women of all ages diagnosed with malignant breast neoplasia, excluding those with incomplete records. The work is compliant with ethical guidelines and ensures participant privacy protection. **Results:** Analysis of the proportion of patients who started treatment within 30 days of diagnosis revealed significant regional variations. The South and Southeast regions had the highest percentages of early treatment, with values often exceeding 25% of diagnosed cases. However, the North and Northeast recorded the lowest rates of starting treatment within this period, with values below 20% in most of the years evaluated. Analysis of the percentage of patients who started treatment after 60 days of diagnosis revealed that the North and Northeast regions had the highest rates of delay in starting treatment, often above 50% of diagnosed cases. The Southeast and South, despite also registering delays, presented relatively lower percentages. **Conclusion:** Despite the implementation of the 60 Day Law, data indicate that the time between diagnosis and treatment start is still a challenge. The lack of statistical significance in the comparison between regions does not rule out the importance of the differences identified, since delays in treatment can compromise clinical outcomes and impact patients' quality of life. Public policies aimed at equity in access to early diagnosis and treatment of breast cancer need to be reinforced, especially in more vulnerable regions. Measures such as strengthening primary care, expanding the cancer care network, and optimizing queue management can be fundamental to reducing these inequalities.

Keywords: breast cancer; health disparities; treatment delay; epidemiology; Brazil.

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Analysis of the impact of mammogram coverage on breast cancer mortality

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Introduction: In Brazil, breast cancer is the most prevalent type and the leading cause of cancer-related death among women. Early detection plays a crucial role in improving cure rates, with mammography being the most effective method for screening. This is because mammography can detect malignant tumors in their early, often asymptomatic stages, allowing for timely treatment initiation and, consequently, a better prognosis. **Objective:** This study aimed to evaluate the impact of mammography coverage in Brazil on breast cancer mortality. **Methods:** A retrospective, cross-sectional quantitative study was conducted using data from the Hospital Information System of the Unified Health System (SIH-SUS) and the Outpatient Information System (SIA-SUS). Variables analyzed included “mortality” due to malignant breast neoplasms (ICD C50) and “mammograms” from 2013 to 2023. For spatial analysis, data were classified according to Brazil’s macro-regions. **Results:** Between 2013 and 2023, the number of mammograms performed in the SUS increased from 3.1 million to 4.6 million, peaking in 2019 (5.2 million). In 2020, it dropped to 3.6 million, then resumed its upward trend. The Southeast led in 2022 (2.1 million), followed by the South (1 million) and the Northeast (974 thousand). Breast cancer deaths rose from 15,074 (2013) to 18,139 (2022), with the Southeast consistently reporting the highest numbers (8,259 in 2022). The South showed more stable mortality rates despite high screening coverage. **Conclusion:** It is evident that the breast cancer mortality rate continued to rise from 2013 to 2023, despite the increase in screening tests during this period. This scenario suggests that although mammography is a fundamental tool for early disease detection, its expansion alone has not been sufficient to reduce mortality. Therefore, the findings highlight the urgent need to strengthen public policies related to early diagnosis, as well as effective medical treatment, to reduce the high mortality rate.

Keywords: breast cancer; mammography; mortality.

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Hospitalized breast cancer patients in Mato Grosso (2014–2024): factors associated with survival and mortality predictors

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Objective: To analyze factors associated with the survival of breast cancer patients hospitalized in the state of Mato Grosso using Hospital Information System of the Brazilian Unified Health System (SIH-SUS) data, focusing on demographic and hospital characteristics. **Methods:** This retrospective cohort study analyzed 7,546 breast cancer patients (ICD C50 and subcategories) hospitalized between 2014–2024, using data from SIH/DATASUS and the Mato Grosso Health Department (DwWeb SES-MT). The outcome was time to death, measured in days from admission, with predictors including demographics and hospitalization factors (e.g., Intensive Care Unit [ICU] admission, service complexity, costs). Descriptive and bivariate analyses were conducted using RStudio, with incidence density for rate ratios (RR), Kaplan-Meier for survival curves, and Mantel-Haenszel chi-square for hazard ratios, considering $p < 0.05$ as statistically significant. **Results:** The analysis included 7,546 breast cancer patients, of whom 98.6% were women. Most were under 60 years old (67.7%) and resided in the metropolitan region of Cuiabá (54.8%). The majority received high complexity care (56.9%) and 7.9% died during hospitalization. Predictors of mortality included male sex (RR 13.53; 95% confidence interval [CI] 7.72–23.72; $p < 0.001$), age over 60 years (RR 1.22; 95%CI 1.04–1.42; $p = 0.050$), medium complexity care (RR 27.37; 95%CI 15.08–49.66; $p < 0.001$), above-average costs (RR 4.91; 95%CI 3.81–6.32; $p < 0.001$), ICU admission (RR 2.06; 95%CI 1.67–2.53; $p < 0.001$), public healthcare (RR 1.74; 95%CI 1.43–2.11; $p < 0.001$), and clinical medical specialty (RR 9.89; 95%CI 7.43–13.16; $p < 0.001$). **Conclusion:** Factors such as male sex, age over 60 years, medium complexity care, high costs, ICU admission, public healthcare, and clinical care were identified as predictors of mortality in breast cancer patients, highlighting the need for early interventions and efficient resource management.

Keywords: risk factors; hospitalization; survival analysis.

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Epidemiological analysis of the main diagnostic tests for breast cancer (mammography, cytology, and histopathology) in Brazil from 2021 to 2024

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Objective: To analyze the distribution of mammography, cytology, and breast histopathology in Brazil between 2021 and 2024, considering race/ethnicity and age group. **Methods:** This is a cross-sectional descriptive study analyzing mammography, cytology, and breast histopathology in Brazil from 2021 to 2024. Data were extracted from the Department of Informatics of the Unified Health System (DATASUS), considering race/ethnicity and age group. **Results:** Analysis of the Cancer Information System (SISCAN) recorded 161,050 breast histopathology cases, with over half in women aged 40–59 years. Peak incidence occurred among those aged 45–49 (13.8%), with prevalence increasing with age. Most cases involved white women (40.04%), followed by Asian (yellow) (34.5%) and mixed-race (*parda*) (15.4%); Indigenous women accounted for only 0.1%. Procedures increased 69.0%, from 28,094 in 2021 to 47,945 in 2024. In the same period, 41,200 breast cytology exams were performed, mainly in women aged 45–49 (6,792), followed by those 40–44 (6,312) and 50–54 (5,379). The Asian population was the most examined (38.8%), followed by white (28.3%) and mixed-race women (19.1%); Indigenous women accounted for only 0.08%. Over 9.2 million mammograms were performed, mainly in women aged 50–69, with relevant numbers among those 45–49 years old. White women were most frequently screened (44.58%), followed by Asian (31.85%) and mixed-race (15.2%). The high rate of incomplete race/ethnicity records (3.95%) indicates a need to improve data quality. **Conclusion:** The increased number of exams reflects greater screening adherence, but access inequalities persist, especially among Indigenous and Black populations. Inconsistent race/ethnicity records highlight the need to improve data collection to support more effective public health policies.

Keywords: breast neoplasms; epidemiology; diagnosis.

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Comparison of sedentary behavior between female cancer survivors and apparently healthy women

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Objective: To compare the sedentary behavior of breast cancer survivors with apparently healthy women. **Methods:** The study included 62 women who were separated into two groups: breast cancer survivors (BCS) (n=32; age: 52.93, standard deviation ± 8.95 years) and control (CG) with apparently healthy women (n=30; age: 52.16 \pm 7.59 years). The study was approved by the ethics committee of the Federal University of Goiás. The sedentary behavior was evaluated by the International Physical Activity Questionnaire (IPAQ), which consists of seven questions designed to estimate the duration and intensity of different dimensions of physical activity or inactivity. Participants responded to the number of minutes they spent in physical activity or not during the week or the weekend. The inclusion criteria for both groups were being in menopause and not participating in any regular resistance exercise program in the last six months, and for the BCS group were having undergone mastectomy or breast quadrantectomy and not having metastasized. Data normality was assessed by the Kolmogorov-Smirnov test. The unpaired t-test was used to compare the groups of BCS and CG. Statistical significance was set at $p \leq 0.05$. **Results:** There was no significant difference between groups in sedentary behavior during the week or the weekend, respectively (BCS 492.7 \pm 155.7; CG 541.5 \pm 201.4, $p < 0.214$; BCS 525.7 \pm 259.4; CG 511.3 \pm 245.1, $p < 0.716$). **Conclusion:** The current results suggest no difference in sedentary behavior between breast cancer survivors and women apparently healthy.

Keywords: cancer; physical inactivity.

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Evaluation of shoulder joint complex, kinesiophobia, quality of life, lymphedema, and physical activity level of women with breast cancer undergoing surgical treatment

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Objective: To evaluate the range of motion, muscle strength, and functional performance of the shoulder joint complex, levels of shoulder pain and disability, kinesiophobia, quality of life, level of physical activity, and lymphedema in women with breast cancer undergoing surgical treatment, at two time points, before and after surgery. **Methods:** Eleven volunteers participated in the study (aged 53.7 standard deviation ± 10.8 years; weight 73.10 ± 17.9 kg, height 1.55 ± 0.05 m). Anthropometric measurements, evaluation of shoulder range of motion (ROM), handgrip strength (HGS), evaluation of upper limb functional performance (disabilities of the arm, shoulder, and hand; DASH), evaluation of shoulder pain and disability level (SPADI), assessment of kinesiophobia (TAMPA), quality of life assessment (SF-36), level of physical activity (metabolic equivalent of task; MET), and evaluation of lymphedema (perimetry) were performed. The study was approved by the ethics committee of the Federal University of Goiás. **Results:** There was no interaction between condition and time for HGS ($p=0.80$) and ROM of the movements evaluated. In addition, there was no effect of the condition factor for HGS ($p=0.41$) and ROM on the movements evaluated. There was also no effect of the time factor for HGS ($p=0.56$) and ROM on the movements of the axis of lateral rotation and medial rotation. However, there was a reduction in abduction ROM ($p=0.002$) and shoulder flexion ($p=0.002$) after surgery on both sides. There was no change in kinesiophobia ($p=0.12$), quality of life ($p=0.09$), level of physical activity, and lymphedema after surgery. However, there was a worsening of functional performance ($p=0.005$) and of the level of pain and disability in the shoulder ($p=0.02$) after surgery. **Conclusion:** ROM was reduced after surgery for abduction movements and shoulder flexion. Functional performance and the level of shoulder pain and disability deteriorated after surgery.

Keywords: women's health; surgery; breast cancer; upper limbs.

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Case report: pseudoaneurysm, an unusual complication after breast biopsy

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Objective: To describe a rare complication after a slightly invasive ultrasound-guided procedure and its pathognomonic finding. **Methods:** This is a review of medical records and images, with chronological record of progress and identification and patient response. **Results:** A female, 61 years old, post-menopausal, hypertensive, asymptomatic, underwent a mammogram, which showed heterogeneous, amorphous, and grouped calcifications in the superolateral quadrant of the left breast, with extension of 1.2 cm. The patient underwent stereotactic-guided mammotomy. A reevaluation was performed on the seventh day, at which she continued complaining of pain and worsening of the hematoma. Ultrasound performed on the eighth day showed nodular vascular formation with flow in a “yin-yang” pattern characteristic of pseudoaneurysm. The literature on pseudoaneurysm after breast biopsies is scarce due to the low incidence of such complication. Data were found from only 23 cases in 22 years of searching. Reported risk factors include advanced age, atherosclerosis, being a woman, and the use of anticoagulant therapy. Pseudoaneurysm manifests clinically as a pulsatile mass at the biopsy site. The first-line diagnostic test is color Doppler ultrasonography, which has an accuracy of 95%. The imaging test shows an internal and turbulent flow exhibiting the typical yin-yang sign. Follow-up of the complication ranges from conservative treatment with ultrasound-guided local compression to intravascular thrombin injection or surgery. **Conclusion:** Pseudoaneurysms contain transmural ruptures that occur when the three layers of the arterial wall are violated, forming a saccular collection. It usually manifests as a pulsatile mass in the breast after some local trauma, or due to biopsies and surgeries. It is a rare complication of core needle biopsies. Patients who present with increased pain and rapid growth of a mass at the tumor site after breast biopsy should be evaluated for possible pseudoaneurysm. Adequate planning of the biopsy site is important, with prior review of imaging tests, thus avoiding injury to vessels close to the tumor.

Keywords: pseudoaneurysm; biopsy; breast cancer.

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Breast cancer in quilombo descendant cities in the state of Pará

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Objective: This study aimed to describe the epidemiological profile of reported breast cancer cases in women residing in officially recognized quilombo communities' descendant cities in the state of Pará. **Methods:** This is a descriptive epidemiological study, with a quantitative approach, comprising malignant breast neoplasms reported in municipalities with quilombo territories officially recognized by the Instituto de Terras do Pará from 2020 to 2025. It was based on data from the Department of Informatics of the Brazilian Unified Health System (DATASUS). **Results:** During the study period, a total of 1,011 cases of breast cancer were reported in the population analyzed in the state of Pará. Ananindeua was the city with the highest number of recorded cases (n=368; 36.3%) and also conducted the highest number of mammography screenings. The most affected age group was 45-49 years, and the most frequently reported staging at diagnosis was grade 3. **Conclusion:** The term “quilombo descendant territories” refers to areas historically occupied by Afro-descendant individuals who fled enslavement and its associated systemic violence. Recent literature suggest a more aggressive course of breast cancer in Black individuals, particularly due to later-stage diagnoses. To the best of our knowledge, epidemiological studies focusing on these specific populations remain scarce, especially in the Northern region of Brazil. The findings of this study may support the development and implementation of public health policies aimed at early diagnosis and disease control in these territories.

Keywords: breast neoplasms; neoplasm staging; ethnic and racial minorities.

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Effects of music therapy on pain and anxiety reduction during surgical procedures or radiotherapy in breast cancer: a systematic review

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Introduction: Breast cancer treatment, which may include surgery, chemotherapy, and radiotherapy, is often associated with pain, anxiety, and reduced quality of life. Music therapy, defined as the clinical and evidence-based use of music to achieve therapeutic goals, has emerged as a promising complementary intervention for pain modulation and stress relief in oncology patients. **Objective:** This study aimed to analyze available evidence on the effects of music therapy in breast cancer patients undergoing oncological treatments, contributing to more humanized and effective therapeutic strategies. **Methods:** A systematic review was conducted using the PubMed database to identify randomized clinical trials evaluating the effectiveness of music therapy in reducing pain, anxiety, and inflammatory markers. Outcomes analyzed included pain intensity via visual analog scale, anxiety levels, and biomarkers such as interleukin-6 and HMGB-1 protein. **Results:** Receptive, individualized music therapy resulted in an average pain reduction of 3.20 points, compared to 1.75 points in the control group receiving standard care. Anxiety levels decreased by 3.25 points in the intervention group, versus only 0.73 in the control group. Interleukin-6 levels decreased by 6.05% in the music therapy group, but increased by 43.53% in the control group. HMGB-1 levels dropped by 62.49% with music therapy, compared to a 30.32% reduction without musical intervention. Additionally, both individual receptive and group-integrated music therapy sessions significantly reduced stress, depression, anger, and state anxiety, with individual sessions achieving greater reductions in anxiety. The combination of music therapy and aromatherapy yielded the most significant pain reduction outcomes, suggesting a synergistic effect. **Conclusion:** Music therapy significantly contributes to pain relief, anxiety control, and reduction of inflammatory processes in breast cancer patients. Both individual and group modalities are beneficial and adaptable to clinical needs, standing out as viable strategies for integration into multidisciplinary oncological care.

Keywords: breast cancer; music therapy; pain; anxiety.

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Breast partial amputation: a new option for oncologic breast-conserving surgery

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Introduction: Breast partial amputation (BPA) is a technique used in patients with gigantomastia and/or a suprasternal notch-areola distance greater than 35 cm. It is infrequently used for breast cancer. **Objective:** This study aimed to review BPA indications and its results in an oncologic hospital. **Methods:** This is a retrospective study of cases undergoing BPA treatment since 2019 at a tertiary oncology hospital. The study was approved by the research ethics committee under number 70454923.9.0000.5105. The BPA technique consists of breast resection with a linear incision close to the level of the mammary fold and resection of all distal breast tissue, followed or not by areolar implants. In oncology, its main indication is for small or medium-sized breasts with extreme ptosis, big and heavy breasts, reducing breast volume, eliminating ptosis, optimizing the area for radiotherapy, and reducing irradiation of neighboring tissues. It is a modality in the context of extreme oncoplasty. The characteristics and results of patients who underwent this procedure were examined.

Results: Ten institutional patients were reviewed; the procedures were generally performed on those with ptotic, non-voluminous breasts, and in elderly patients. The surgery was associated with conservative treatment of the breast on the tumor side (six patients), with the majority undergoing symmetrization (five patients). Another indication was for the symmetrization of those (two patients) who underwent mastectomy with prosthesis, or reduction of the contralateral ptotic breast in patients undergoing mastectomy without reconstruction. No serious surgical complications were observed, and the degree of satisfaction was high. **Conclusion:** BPA is an easy-to-mark and perform method for breast-conserving surgery. It represents a solution for ptotic, big, or heavy breasts. It is associated with low surgical complications, allowing a reduction in the dose of radiotherapy in nearby organs, leading to a high degree of satisfaction.

Keywords: breast-conserving surgery; amputation.

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Responses from one session of Mat Pilates on anxiety indicators in apparently healthy women and breast cancer survivors

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Objective: To compare the responses of one Mat Pilates session on state anxiety indicators among women who survived breast cancer with apparently healthy women. **Methods:** Thirty women participated in the study, separated into a group of breast cancer survivors (BCS) (n=15; age 61.00 standard deviation \pm 8.60) and a group of apparently healthy women (n=15; age 59.07 \pm 6.78). The study was approved by the ethics committee of the Federal University of Goiás. State anxiety levels were evaluated by the IDATE, which consists of 20 statements in which volunteers must indicate how they feel at a given moment; the scores can range from 20–80, where: 20–34 represents mild or low anxiety; 35–49 moderate anxiety; 50–64 high or severe anxiety; and 65–80 very high anxiety or panic. The inclusion criteria for both groups were being in menopause and not participating in any regular resistance exercise program in the last six months. For the BCS group, the inclusion criteria were having undergone mastectomy or breast quadrantectomy and not having metastasized. The mean and standard deviation were used for data analysis. **Results:** There was no difference in the classification of anxiety levels between BCS and apparently healthy women, respectively (BCS pre-test: 34.00 \pm 7.07 and post-test: 34.00 \pm 6.78; healthy women pre-test: 30.00 \pm 6.68 and post-test: 31.00 \pm 4.77). **Conclusion:** The current results suggest no difference in the classification of anxiety levels between breast cancer survivors and women apparently healthy, although the classification of anxiety levels of both groups represents mild or low anxiety.

Keywords: cancer; anxiety; exercise.

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Interval for surgical treatment after neoadjuvant chemotherapy in patients with breast cancer at the Hospital de Clínicas Complex of the Federal University of Paraná from 2020 to 2022

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Introduction: One of the possible critical factors for the outcome of breast cancer treatment is the time between diagnosis and the start of neoadjuvant therapy, and the interval until surgical treatment. Prolonged time between diagnosis and the institution of treatment may be associated with a worse prognosis, with an impact on overall survival and progression-free survival. **Objective:** To analyze the time interval between the end of neoadjuvant therapy and surgical treatment in patients at the Hospital de Clínicas Complex of the Federal University of Paraná (CHC-UFPR) between 2020 and 2022. **Methods:** This is a retrospective, observational, and descriptive study. All female patients who were diagnosed with breast cancer and treated at CHC-UFPR and who underwent neoadjuvant therapy followed by surgical treatment were included in the study. **Results:** The sample consisted of 44 patients. The average time between the end of neoadjuvant therapy and surgical treatment was 47.86 days. The average time to start treatment (time from diagnosis to start of neoadjuvant therapy) was 36.20 days. When comparing the time to start neoadjuvant therapy between the years, there was a significant difference between 2020 and 2022 ($p=0.009$). Surgical treatment was performed after the end of neoadjuvant treatment within eight weeks in 33 (75%) patients and more than eight weeks in 11 (25%). **Conclusion:** The present study demonstrated that 75% of patients diagnosed with breast cancer between 2020 and 2022 at the CHC-UFPR underwent surgical treatment within eight weeks of the end of neoadjuvant therapy.

Keywords: breast cancer; neoadjuvant therapy; surgery.

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A longitudinal cohort in breast cancer patients: a case-control study

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Objective: To statistically evaluate the possible changes in the sexual and psychological behavior of the participants in the control and surgical group (submitted to radical mastectomy), comparing five moments of diagnosis, according to the methodology of the Brazilian version of the Watts Sexual Function Questionnaire (BSWSFQ), considering the qualitative issues of the study. **Methods:** This is a longitudinal cohort, with one year of follow-up, including women between 50 and 60 years of age, with basic education (minimum), and a history of early sexual affective functioning, with benign or malignant breast nodules (submitted to radical mastectomy with or without breast reconstruction as a form of treatment), from the Institute of Gynecology of the Hospital de Clínicas of the University of São Paulo (Mastology Sector) and the Institute of Social Responsibility of the Mastology Sector at the Hospital Sírio-Libanês. The participants filled out the BSWSFQ and five qualitative questions were added to assess how they faced issues related to breast cancer and its treatment. Exploratory statistical analysis, case study, coding of qualitative variables for dummies 0/1, panel data analysis, bootstrap method, and hypothesis tests for comparison between groups were used. **Results:** Considering $p=0.10$, it can be stated that statistically significant differences were found between the moments of collection in the arousal phase for the surgical group, which may have impacted the differences observed between the moments for the Total BSWSFQ indicator. Other significant differences were also found. **Conclusion:** Five years later, the analysis of the panel data confirmed and deepened the results identified throughout the master's project. The comparative condition between the groups was satisfied. Tests revealed differences in the timing of data collection between the groups and the comparison between the groups. The qualitative evaluation showed the richness of variations in feelings/attitudes (resilience).

Keywords: breast cancer; cohort study; radical mastectomy; resilience.

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Image-guided percutaneous cryoablation of breast cancer

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Introduction: Percutaneous cryoablation has emerged as a minimally invasive alternative to conventional surgical treatment of breast cancer, particularly in patients with comorbidities, advanced age, or who refuse conservative surgery. The technique uses extremely low temperatures to destroy localized tumors, with the potential for lower morbidity and better aesthetic results. **Objective:** This study aimed to evaluate the efficacy, safety, and feasibility of image-guided percutaneous cryoablation in the treatment of breast cancer, focusing on its application as curative or palliative treatment in selected patients. **Methods:** Prospective and retrospective studies of ultrasound-, computed tomography-, or magnetic resonance-guided cryoablation were analyzed, with different sample sizes and monitoring methods. A literature review was performed using the descriptors “cryoablation” and “breast cancer” on the PubMed, LILACS, VHL, NICE, and SciELO databases. Among the 83 publications, 15 were selected from the last five years. The parameters evaluated included local tumor control, complications, patient satisfaction, and efficacy of imaging methods in post-procedure follow-up. **Results:** Cryoablation was well tolerated, performed under local anesthesia, and technically successful in most cases. Complete ablation rates ranged from 70% to 100%, especially effective in tumors smaller than 15 mm. Complications were rare and mild, such as hematomas or superficial burns. Most patients had good local control, with a low recurrence rate. Imaging methods such as magnetic resonance imaging and contrast-enhanced mammography were useful in assessing the efficacy of the ablation technique. Patient satisfaction was high, even in palliative settings. **Conclusion:** Image-guided percutaneous cryoablation is a safe, effective, and promising therapeutic option for early breast cancer in selected patients. It can provide good tumor control with less physical and emotional impact, being especially valuable when surgery is not indicated. However, the high cost inhibits its indication. Additional studies are needed to consolidate its clinical application.

Keywords: cryoablation; breast cancer.

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Effects of natural polyphenols on metabolic pathways in breast cancer: an integrative review

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Objective: To analyze the effects of natural polyphenols on the modulation of metabolic pathways associated with proliferation, apoptosis, and cell invasion in breast cancer. **Methods:** An integrative review was conducted on PubMed (2020–2025) using MeSH terms: (“Polyphenols”[Mesh]) AND (“Breast Neoplasms/metabolism”[Mesh] OR “Breast Neoplasms/pathology”[Mesh] OR “Breast Neoplasms/physiopathology”[Mesh]). The inclusion criteria focused on studies that examined the effects of natural polyphenols on metabolic pathways related to proliferation, apoptosis, and cell invasion in breast cancer. A total of 78 articles were screened, with 53 meeting the eligibility criteria for final analysis. Fourteen articles were excluded for not addressing metabolic pathways in tumor progression, seven for not focusing on natural polyphenol therapies, and four for not fitting the study’s scope. **Results:** Natural polyphenols, such as resveratrol, acteoside, epigallocatechin gallate, and curcumin derivatives, exhibit significant antitumor effects in breast cancer, particularly in aggressive subtypes like triple negative. Studies identified key mechanisms, such as apoptosis induction via caspase activation and BAX/BCL-2 regulation, metabolic inhibition by suppressing glycolysis, epigenetic modulation of oncogene promoters, and immune activation that enhances the cytotoxicity of natural killer cells. Additionally, polyphenols show synergy with chemotherapeutic agents, reducing drug resistance by modulating micro ribonucleic acids (miRNAs) and adenosine triphosphate (ATP)-binding cassette transporters. Advances in nanotechnology, such as the encapsulation of polyphenols in nanoparticles, have improved bioavailability and targeted delivery, thereby increasing therapeutic efficacy. Despite promising results, further clinical trials are needed to optimize polyphenol-based therapies and translate pre-clinical findings into effective treatments for breast cancer. **Conclusion:** Natural polyphenols regulate key pathways in breast cancer progression, showing promise as therapeutic agents. Their effects on apoptosis, metabolism, immunity, and epigenetics are enhanced by nanotechnology and combination therapies, especially in aggressive subtypes. Future studies should focus on optimizing bioavailability and conducting clinical trials to validate their efficacy.

Keywords: polyphenols; breast neoplasms; herbal medicine.

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Impact of the COVID-19 pandemic on the incidence of hospitalizations due to puerperal mastitis and breast abscess in Brazil: an ecological study

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Objective: This study aimed to evaluate the impact of the COVID-19 pandemic on hospitalization patterns for puerperal mastitis and breast abscess within the Brazilian Unified Health System (SUS). **Methods:** An ecological study was conducted using data from the Hospital Information System of the SUS (SIH/DATASUS). Hospitalizations due to postpartum breast-related issues across Brazil's five regions were analyzed monthly, with March 2020 set as the interruption point. Data normality was assessed using a normalized Q-Q plot and a standardized residual histogram in R software, with a significance level of 5% ($p < 0.05$). **Results:** A total of 11,279 hospitalizations were analyzed, with incidence rates ranging from 6 to 10 cases per 10,000 live births between 2018 and 2022. The Central-West region had the highest hospitalization rates both pre- and post-pandemic, while the Northeast reported the lowest. A 3.35% decline in expected hospitalization levels was observed after the pandemic in Brazil and in most regions. **Conclusion:** Hospitalization incidence for postpartum breast conditions varied by period and region. The COVID-19 pandemic contributed to a reduction in incidence across most Brazilian regions.

Keywords: mastitis; puerperium; hospitalization; COVID-19.

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Artificial intelligence in breast cancer detection and screening: an integrative review

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Objective: To investigate advanced technologies for improving the accuracy and efficiency of breast cancer detection and screening. **Methods:** An integrative review was performed on the databases PubMed, LILACS, and Embase (2001–February 2024), using MeSH/Emtree terms: “breast neoplasms”, “artificial intelligence”, and “mass screening”. Inclusion criteria encompassed studies on breast cancer detection/diagnosis employing artificial intelligence (AI), irrespective of language. After duplicate removal (Rayyan software; n=31), 144 articles were screened, with 66 meeting eligibility for final analysis. **Results:** AI technologies have progressed from early wavelet-based models to sophisticated deep learning systems, such as Transpara[®] and Lunit INSIGHT MMG, enhancing diagnostic accuracy and alleviating radiologists’ workload. Commercial tools like Transpara[®] demonstrated a 15% reduction in false negatives, while Lunit INSIGHT MMG increased early detection rates by 22%. Hybrid AI-radiologist models achieved the highest sensitivity (94%), outperforming individual human assessments. Challenges include persistent false positives (8–12%) and scalability barriers. Emerging approaches integrating genetic/demographic data highlight AI’s potential for personalized screening. **Conclusion:** AI-driven tools like Transpara[®] and Lunit INSIGHT MMG demonstrate enhanced accuracy in breast cancer detection through deep learning, yet challenges such as false positives (8–12%) and scalability persist. Personalized approaches integrating genetic/demographic data show promise for tailored screening. AI-human collaboration optimizes diagnostic accuracy; however, further validation and standardized clinical protocols are essential for widespread implementation.

Keywords: artificial intelligence; mass screening; breast neoplasms.

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Breast cancer treatment-induced peripheral neuropathy: what does the literature tell us about it?

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Objective: To identify risk factors and effective preventive and therapeutic interventions for the management of chemotherapy-induced peripheral neuropathy in patients with breast cancer. **Methods:** The study followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. For the search and selection of articles, the following descriptors were used: “peripheral neuropathy”; “breast cancer”; and “neoplasm”. The period selected for the search was the last ten years. As inclusion criteria, the articles should be systematic reviews and/or meta-analyses and randomized controlled studies in English, Spanish, and Portuguese. Duplicate articles, letters to the editor, and opinion articles were excluded. **Results:** The risk factors identified were neuropathic pain, anxiety, comorbidity, age, and chemotherapy treatment. The preventive and therapeutic interventions used were pharmacological treatment for peripheral neuropathy, psychological support, and management of neuropathic pain. **Conclusion:** The most recurrent risk factors were peripheral neuropathy and anxiety. Preventive and multidisciplinary approaches were fundamental for the management of peripheral neuropathy. Approaches with pharmacological interventions, physiotherapeutic approaches, and psychological approaches were highlighted.

Keywords: peripheral neuropathy; breast cancer; neoplasm.

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Comparative analysis of tumor biology with age range and clinical outcome of patients diagnosed with breast cancer in one year in a tertiary hospital in the Federal District

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Objective: To comparatively analyze the age range of breast cancer patients with tumor profile, clinical staging, and therapeutic proposal in a tertiary hospital. Additionally, this study aimed to evaluate the incidence rate of grade 3 tumors and advanced clinical staging in patients under 50 years of age. **Methods:** This is a retrospective observational cross-sectional study. The medical records of all patients who underwent breast cancer surgery from April 2022 to March 2023 were examined. The relationship between the age groups of patients was comparatively analyzed (with a cutoff point of 50 years) with the predominant molecular biology and its relationship with the immunohistochemical profile, clinical staging, and therapeutic indication. The chi-square test was used to assess the association between the molecular profile with clinical response, age, upfront surgery, and staging. The Wald test for equality of relative risk was used to verify whether age is a significant risk factor for grade, molecular profile, response to chemotherapy, upfront surgery, type of surgery, and clinical staging. **Results:** More advanced clinical staging and high-grade tumors were observed in younger patients and, consequently, greater indication for neoadjuvant therapy in this age group, in addition to less conservative surgery and more breast reconstruction. Patients under 50 years had 85% higher risk of having grade III ($p=0.0127$), 83% higher risk of having stages IIB to IV ($p=0.0339$), and 95% risk of not having undergone up-front surgery ($p=0.0422$). **Conclusion:** The data obtained reveal that women under 50 years of age face specific challenges, such as less conservative surgeries due to tumors with a worse prognosis. The differences observed between age groups reinforce the need for personalized approaches to the management of breast cancer.

Keywords: breast cancer; female; epidemiology.

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A new navigation aid tool for breast health education

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Introduction: The navigation in healthcare is an evidence-based intervention aimed at guiding patients through the healthcare system, particularly for breast cancer patients. It addresses barriers like fear, communication issues, and treatment delays. Effective information dissemination, potentially via Instagram, can enhance patient support and continuity of care, though scientific documentation on this is limited. **Objective:** This study highlights the need for social media to improve patient navigation and reduce disparities in healthcare access, and thus aimed to evaluate Instagram as a tool for patient navigation in a breast health clinic. **Methods:** This is an observational, prospective study comprising female patients with active Instagram accounts and breast health issues. Two questionnaires assessed health education and barriers faced. Over a year, patients accessed educational content via the @mama_sus account. Data were collected ethically, ensuring privacy and consent. The study aimed to enhance patient support and navigation through social media, contributing to better health outcomes. **Results:** A total of 76 patients were screened at the mastology clinic of Barão de Lucena Hospital, with 63 meeting inclusion criteria. The study revealed that most participants were women aged 18–49 years, with various risk factors for breast cancer. After a year of educational content on Instagram (@mama_sus), 87.3% found the platform user-friendly, and 97.0% felt secure with the information provided. The initiative improved understanding of health rights and the importance of regular check-ups, with 95.0% stating that knowledge reduced their fears regarding breast health. **Conclusion:** Instagram is a useful tool for breast cancer patients, significantly reducing barriers. The platform is easily accessible and intuitive, benefiting patients of all education levels.

Keywords: breast cancer; epidemiology.

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The importance of a multidisciplinary team in the treatment of oncology patients and adherence to the proposed treatment

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Objective: This study aimed to investigate the influence of the multidisciplinary team on the adherence to treatment of patients diagnosed with breast cancer. **Methods:** A literature review was conducted based on 39 articles indexed on the databases SciELO, LILACS, and VHL Brazil, published between 2008 and 2023. **Results:** Breast cancer is one of the most prevalent neoplasms among women, often associated with unfavorable prognoses and significant impacts on quality of life. Adherence to treatment is a critical challenge, influenced by factors such as emotional fragility, changes in appearance and routine, adverse effects of medications, lack of understanding about the treatment, and socioeconomic barriers. The multidisciplinary team can play a crucial role in improving adherence by offering comprehensive support. The review showed that nurses play an essential role providing emotional comfort and continuous support. The contribution of pharmacists to drug therapy has been shown to increase adherence. Psychologists help patients deal with the diagnosis and adapt to changes, facilitating adherence. Nutritional assistance provided by nutritionists improves response to treatment and minimizes side effects. Physiotherapy promotes pain relief and improves quality of life, contributing to adherence. **Conclusion:** The multidisciplinary approach to treating patients with breast cancer results in significant improvements in multiple dimensions, especially in mental health and quality of life. This reinforces adherence to treatments and the bond with the health team, highlighting the importance of integrated and collaborative intervention in oncological care.

Keywords: breast cancer; patient care team.

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From high costs to high access: breaking barriers in breast magnetic resonance imaging artificial intelligence, abbreviated protocols, and the future of accessibility

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Objective: To provide a comprehensive overview of the main tools currently in development, expected to optimize the accessibility of magnetic resonance imaging (MRI) in the context of breast cancer screening and diagnosis. **Methods:** This is a literature review performed on the PubMed database using the terms “low-field MRI”, “barriers breast MRI”, “future breast MRI”, “costs breast MRI”, between the years 2020 and 2025. **Results:** A total of 148 studies were evaluated; of those, 24 articles described innovative strategies in development to improve breast MRI accessibility. Abbreviated protocols have been validated to reduce exam duration and lower costs compared to traditional MRI by utilizing only essential sequences for evaluating high-risk patients. Additionally, models utilizing isolated diffusion-weighted imaging sequences have shown promise, offering insights into tissue cellularity and membrane integrity, with potential applications in high-risk screening. Artificial intelligence (AI) software has been designed to improve diagnostic accuracy and reduce interpretation time, thus increasing exam capacity and lowering per-exam costs. Certain tools, such as AISmartDensity, analyze mammograms to identify patients who may benefit from additional MRI, thus preventing and optimizing the use of limited resources available in public healthcare systems. Moreover, studies also explored reducing magnetic field strength (0.55T–1T) as a means of improving cost-effectiveness, utilizing AI to enhance signal-to-noise ratio and image acquisition, as the reduced magnetic field may result in compromised image quality. Additionally, theoretical studies suggest a future role for portable MRI systems and simulated contrast MRI, although commercial models are not yet available. **Conclusion:** Addressing disparities in breast MRI is both possible and should be encouraged through cost-reduction strategies, as well as the development and support of novel software. Furthermore, protocol optimization ought to be stimulated in institutional centers, considering its potential impact on breast cancer care, particularly for high-risk women.

Keywords: magnetic resonance imaging; artificial intelligence; future.

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Impacts of late screening and diagnosis of breast cancer: an integrative literature review

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Objective: To analyze the impacts of late screening and diagnosis of breast cancer and its implications for medicine and women's health. **Methods:** This is an integrative review, carried out between February and March 2025, on the following databases: Virtual Health Library (VHL), MEDLINE/PubMed (via the National Library of Medicine), Scopus, and Web of Science Core Collection (Clarivate Analytics). Cross-sectional, cohort, or case-control studies published in the last five years were considered. The studies were independently selected by two reviewers using the Rayyan[®] literature review manager. **Results:** Fifty-eight of the 186 studies identified were duplicates. Ninety-three were excluded for not meeting the eligibility criteria, resulting in 35 articles. Late screening and diagnosis had a negative impact on women's health, such as psychological and clinical consequences, lower adherence to treatment, higher risk of metastasis due to diagnosis at an advanced stage, more aggressive treatments, worse prognosis, lower survival, increased risk of mortality, and higher costs for health services. **Conclusion:** The impacts shown could support the actions of managers and professionals in terms of efficient care and holistic monitoring, as well as improving indicators, reducing costs for health services, and increasing the quality of life of women diagnosed with breast cancer.

Keywords: breast neoplasms; delayed diagnosis; mass screening; women's health.

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Pilates method and augmented reality: strategies to improve the quality of life for public health system users diagnosed with breast cancer: a randomized study

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Objective: To evaluate the effectiveness of applying the Pilates method and augmented reality to improve the quality of life of breast cancer patients who use the Brazilian Unified Health System (SUS). **Methods:** Design, setting, and participants; this controlled, randomized, prospective, single-center clinical trial will analyze data from SUS users undergoing treatment for breast cancer between 2025 and 2026. Inclusion criteria: women, over 18 years old, SUS users, diagnosed with breast cancer and undergoing treatment at the Advanced Breast Diagnostic Center (CORA) at the Hospital das Clínicas in Goiânia. Exclusion criteria: clinical, orthopedic, or neurological contraindications that prevent the practice of physical activity and less than 85% of the expected frequency of activities. Interventions: the experimental group will be formed by 75 women who will practice 12 Pilates exercises, and the control group will comprise 150 women who will perform 12 exercises with augmented reality. Participants will be screened by a specific team and randomly allocated to two groups according to their entry into the project: intervention group and control group. Randomization will be on a 1:2 scale. As soon as the first patient accepts and signs the informed consent form, she will be allocated to the intervention group and the next two will be automatically allocated to the control group and so on for the remaining participants. The time of participation in the project will be a minimum of three months and a maximum of six months, with a frequency of two classes per week. Ethical aspects: the project was submitted for approval by the research ethics committee of the Hospital das Clínicas of the Federal University of Goiás (CEP/HC/UFG), opinion n° 7,070,731, and in the Brazilian Registry of Clinical Trials, UTN n° U1111-1316-6505. **Results:** Main expected results and measures: to improve the quality of life assessed by the questionnaire (EQ-5D-3L). **Conclusion:** The study is in the structural phase to later start clinical protocols.

Keywords: breast neoplasms; augmented reality; virtual reality; quality of life; comprehensive health care.

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From screening to intervention: impasses and elucidations granted to nurse navigators in clinical studies

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Objective: To map the roles of nurse navigators in recruiting patients for clinical trials. **Methods:** This is an integrative review, based on searches in the Virtual Health Library (VHL), using the terms “nurse navigator”, “clinical research” and “patient recruitment”. The selection included articles published over a 10-year period. **Results:** In two North American studies, inclusive and didactic approaches were used to clarify the phases of clinical protocols to candidates, resulting in more assertive recruitment with an emphasis on sociocultural heterogeneity. In contrast, a Brazilian study of 173 patients identified difficulties in screening, such as communication problems (24.3%), patient disinterest (16.2%), and missed appointments (16.2%). In addition, another investigation in Brazil revealed that only 1% of health professionals refer cancer patients for clinical trials. However, a survey of 263 patients who were under the care of the nurse navigator found that 97% were satisfied with the service provided, despite the difficulties faced. **Conclusion:** Faced with these obstacles, it is essential for nurses to identify the patient’s sociocultural obstacles, and to be compatible with previous institutional flows, adapting the model of care provided in the service of origin to the needs of the clinical protocol. Furthermore, it is essential that, as well as sharing the studies with the multi-team, they are fully involved, understanding the criteria and interpreting their scope so that each referral is effective. The nurse navigator, with the support of the Federal Nursing Council, plays a fundamental role in organizational processes in the face of the complexity of health systems. The growing demand for innovation in clinical research requires the recruiter to take an integrated approach, with accessible communication and referrals that facilitate the patient’s journey through the various services available.

Keywords: patient navigation; breast cancer.

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Real-world study on the use of trastuzumab deruxtecan in breast cancer at a public hospital in the state of Goiás

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Objective: To analyze clinical data, evaluate response rates, and overall survival in breast cancer patients receiving trastuzumab deruxtecan (T-DXd) at a public hospital in Brazil. **Methods:** Medical records of patients treated with T-DXd at the Clinical Oncology service of Hospital das Clínicas, Federal University of Goiás, were reviewed. **Results:** Among 28 patients proposed for treatment, 12 accessed the medication, while 15 awaited approvals due to legal barriers, since the medication is not incorporated into the national public healthcare system. Therefore, the median time from request to treatment was 3.5 months (range: 1–7). The median age was 54.4 years (range: 31–74). Tumor subtypes were evenly distributed: human epidermal growth factor receptor-type 2 (HER2)-positive (33.3%), luminal-HER (33.3%), and HER2 low (33.3%). All patients had localized disease and received neoadjuvant chemotherapy. The median time to metastatic recurrence was 39 months, with HER2 low patients experiencing the longest interval (86.5 months). Common recurrence sites were lungs and bones (58.4%), liver (50%), and unresectable local recurrence (33.4%). The median number of prior treatments was 4; at the time of analysis, 25% remained on treatment (median: 5 months, range: 2–22); and 75% experienced disease progression. Median progression-free survival was 5 months overall, 13 months for HER2 positive, and 4 months for luminal-HER and HER2 low. Two patients had received ado-trastuzumab emtansine (T-DM1) before starting T-DXd, both were HER2-positive. One had a minimal response (4.5 months with T-DM1 and 5 months with T-DXd), while the other had an exceptional response (31 months on T-DM1 and continued T-DXd for 22 months). Overall, 25% of patients died; median overall survival of 12 months after initiating T-DXd. **Conclusion:** Compared to DESTINY-Breast 3 and 4 trials, real-world outcomes were inferior, likely due to patient pre-treatment and access limitations. Despite these challenges, T-DXd demonstrated clinical benefits, reinforcing the need for optimized treatment strategies in public healthcare.

Keywords: breast neoplasms; receptor ErbB-2; drug therapy; drug-related side effects and adverse reactions.

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Challenges in the diagnosis of breast cancer in homeless women: a literature review

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Introduction: Breast cancer is the most common neoplasm among women and a global public health challenge. Homeless women face barriers to diagnosis and treatment due to the lack of preventive exams, stigma, and social vulnerability—factors that compromise early detection and adherence to treatment. **Objectives:** The study aimed to analyze challenges in diagnosing breast cancer in homeless women, highlighting barriers and strategies for inclusion. **Methods:** The bibliographic review was conducted using the PubMed, SciELO, and Google Scholar repositories, employing the descriptors “breast cancer,” “social vulnerability,” “challenges,” and “treatment”, including studies from 2015 to 2024. **Results:** This review analyzed the factors that hinder the diagnosis and treatment of breast cancer in vulnerable women, especially those experiencing homelessness. Limited access to healthcare, long waiting lines, socioeconomic inequality, and lack of information exacerbates the problem. Racial disparities indicate that Black and mixed-race women face greater difficulties. Public policies are essential to ensure equity in accessing proper examinations and treatments. **Conclusion:** The review on breast cancer diagnosis in homeless women in Brazil (2015–2024) identified difficulties in accessing healthcare, long waiting lines, a lack of examinations, and insufficient knowledge about prevention. Socioeconomic and racial disparities exacerbate the scenario, with advanced stages being more prevalent among Black and mixed-race women. The absence of continuous screening and adapted policies contributes to delayed diagnoses. Effective measures, such as mobile units and targeted campaigns, are essential to broaden access. Improving data quality can make strategies more precise, reducing inequalities in care and treatment.

Keywords: breast cancer; social vulnerability treatment.

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Impact of the ketogenic diet on breast cancer management: a systematic review

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Introduction: Cancer is a group of diseases marked by loss of cellular control, leading to genetic mutations and uncontrolled proliferation. Among women, breast cancer is the most common type, with rising global incidence linked to factors such as age, genetics, lifestyle, and diet. Among modifiable lifestyle habits, nutrition plays a key role in both prevention and treatment. The ketogenic diet—high in fats and low in carbohydrates—aims to replace glucose with ketone bodies as the main energy source, impacting cancer cell metabolism. This strategy seeks to inhibit the Warburg Effect, where tumor cells preferentially use glucose for energy, even in the presence of oxygen. **Objectives:** This study aimed to assess the impact of the ketogenic diet on breast cancer management by Measuring inflammatory biomarkers. **Methods:** This systematic review examined studies published between 2010 and 2024 on the PubMed database, using the descriptors “ketogenic diet,” “breast cancer,” “metabolic therapy,” and “breast neoplasm.” The study included clinical trials, systematic reviews, and experimental research on ketogenic diets in patients with breast cancer. **Results:** The reviewed studies reported significant reductions in biomarkers such as lactate, insulin, and fasting glucose, alongside anti-inflammatory effects, including lower tumor necrosis factor-alpha and increased interleukin-10 levels. An inverse correlation between carbohydrate intake and beta-hydroxybutyrate levels indicated adherence to ketosis. Additionally, the ketogenic diet showed potential in improving quality of life, body composition, and treatment adherence. **Conclusion:** The ketogenic diet emerges as a promising adjuvant strategy in breast cancer management. Its effects on tumor metabolism and systemic inflammation suggest potential benefits when integrated into multidisciplinary treatment protocols. Further research is warranted to ensure its safety and efficacy in clinical settings.

Keywords: breast cancer; ketogenic diet; patient care management.

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Genetics and predisposition to breast cancer: the impact of mutations in the BRCA1 and BRCA2 genes

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Introduction: Breast neoplasia is influenced by environmental, hormonal, and genetic factors. Among the hereditary factors, mutations in the BRCA1 and BRCA2 genes stand out, as they are strongly associated with disease predisposition, with a risk of 80–85% for the development of breast cancer when present. **Objective:** The aim of this article was to analyze the impact of mutations in the BRCA1 and BRCA2 genes on breast cancer predisposition, highlighting their influence on the risk of the disease and the screening and prevention strategies available. **Methods:** This is a descriptive epidemiological study based on data from the Cancer Information System (SISCAN) referring to the risk elevated by screening mammography in Brazilian residents between 2019 and 2025. **Results:** Genetic factors play a key role, especially BRCA1 and BRCA2 mutations, which increase lifetime risk by 50%. Rigorous follow-up on genetic testing enables preventive strategies like prophylactic mastectomies. Early detection through mammograms remains crucial for reducing mortality, and for this purpose, mammography is recommended from the age of 50. A public policy initiative from the 1980s has improved access to screenings and early detection rates. The SISCAN analysis evaluated 2,130,098 high-risk breast cancer patients, 726,812 with a family history. Mammography adherence was high, with only four patients not undergoing the exam. Breast Imaging Reporting and Data System (BI-RADS[®]) category 5 was found in 1,842 cases and category 4 in 8,054. The study suggests a stricter screening, including magnetic resonance imaging and genetic testing, to improve early detection. **Conclusion:** The analysis of SISCAN data demonstrates the importance of screening for breast cancer. This tool remains ideal for early detection, resulting in positive data to reduce mortality, although there are still challenges such as inequality in access to health. Public policies have proven effective in expanding coverage, due to the inclusion of magnetic resonance imaging and genetic tests.

Keywords: breast cancer; mammography; genetics.

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Myoclonic Epilepsy with Ragged Red Fibers syndrome and its potential link to breast cancer development: biological and clinical implications

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Objectives: To understand the possible link between Myoclonic Epilepsy with Ragged Red Fibers (MERRF) syndrome and breast cancer development. **Methods:** This study consists of a literature review, gathering pertinent articles from the last 15 years. The bibliographic research included articles written in English, selected according to their relevance. Exclusion criteria involved articles that presented patients with other significant comorbidities and those receiving active chemotherapy or radiation therapy. **Results:** MERRF is a rare mitochondrial disease with predominant progressive myoclonus. It is commonly present alongside myoclonic epilepsy, cerebellar ataxia, sensorineural deafness, short stature, cutaneous lipomas, and myopathy. Currently, there are no studies that defend a direct correlation between MERRF syndrome and breast cancer, but there are studies that suggest that mitochondrial defects may result in breast cancer. Breast cancer incidence and mortality have been consistently high among women, and recently, the role of mitochondria in breast cancer has received increasing attention. Mitochondria, as the powerhouse of the cell, are central to both the pathophysiology of MERRF and the development of cancer, including breast cancer. In MERRF, mutations in mitochondrial deoxyribonucleic acid (DNA) lead to energy deficits, oxidative stress, and disrupted cellular processes, which affect tissues with high metabolic demands, such as muscles and neurons. This mitochondrial dysfunction can contribute to the accumulation of abnormal cells and altered signaling pathways, processes that are also implicated in cancer initiation and progression. While MERRF itself is not directly linked to breast cancer, the defective mitochondrial function observed in MERRF patients might predispose them to cellular instabilities, potentially increasing the risk of malignancies like breast cancer. **Conclusion:** The intricate relationship between mitochondrial dysfunction, oxidative stress, and cellular transformation suggests that MERRF may share underlying mechanisms that also drive tumorigenesis, providing an intriguing area for further exploration in cancer research, since there are no studies that link these conditions.

Keywords: neoplasms; mitochondria; MERRF syndrome.

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Breast cancer screening in transgender women

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Objective: To identify early detection approaches for breast cancer in transgender women undergoing hormone therapy.

Methods: This is an integrative review of five articles selected between 2015 and 2025 from the databases PubMed, SciELO, and VHL. The inclusion criteria considered studies addressing the incidence, risk factors, and screening guidelines for transgender women. **Results:** Feminizing hormone therapy is associated with an increased risk of breast cancer, although this risk is still lower compared to cisgender women. The risk for transgender women on therapy is approximately 46% of the risk observed in cisgender women undergoing regular mammographies. Additionally, 12% of transgender women reported lack of access to adequate screening services. It is recommended that women on hormone therapy for more than five years start mammography at age 50. **Conclusion:** Despite some advancements, there is a need to adapt health protocols to include early breast cancer detection recommendations for transgender women, considering hormone therapy.

Keywords: breast cancer; screening; transgender persons.

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Post-treatment morphea in breast cancer: a case report

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Objective: Morphea, or localized scleroderma, is a rare connective tissue disorder characterized by cutaneous sclerosis and variable tissue involvement. It can be clinically classified based on depth, and the superficial or deep plaque form is the most common in adult patients. **Methods:** The etiology remains unclear, with the main hypotheses involving autoimmunity and genetic mosaicism. Although benign, the progression of local infiltration, nerve, and even internal organ involvement in morphea may lead to irreversible functional impairments. **Results:** A 38-year-old female patient was seen in a private outpatient clinic with an 8 cm nodule in the upper quadrant of the left breast, a palpable axillary node, and suspicious findings on the mammogram. A core biopsy revealed moderately differentiated invasive ductal carcinoma. The proposed treatment included neoadjuvant chemotherapy followed by quadrantectomy with axillary lymph node dissection and adjuvant radiotherapy. One month after surgery, the patient presented a tumor-like lesion at the surgical scar site, and biopsy demonstrated dense collagen dermis infiltration involving the pili muscle and interlobular septa, while magnetic resonance imaging revealed significant thickening of the skin, parenchyma, and local musculature, associated with a cystic-solid lesion. The patient was referred to a dermatologist, who started treatment with hydroxychloroquine sulfate 400 mg and halobetasol propionate 0.05% cream for topical use, resulting in visible improvement of the lesion. The patient is currently undergoing hormone therapy with semiannual follow-ups jointly with the rheumatology team due to the risk of local infiltration and extracutaneous manifestations. **Conclusion:** The treatment of morphea remains under discussion. Although few studies have demonstrated efficacy, high-potency topical corticosteroids, immunosuppressants, and even phototherapy have been considered viable options, and treatment choice is based on infiltration severity. Although rare, morphea impacts post-surgical follow-up in breast cancer patients, especially considering the absence of documented cases in the literature describing a similar presentation at carcinomatous lesion sites.

Keywords: localized scleroderma; breast cancer; segmental mastectomy; adjuvant radiotherapy.

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Metastatic chest wall sarcoma invading the breast: a rare case report

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Objective: To report a rare case of metastatic chest wall sarcoma, invading the breast. **Methods:** This is an epidemiological, observational, and descriptive study, submitted and approved by the ethics committee (CAAE: 7687002300005553; Opinion: 7392920). **Results:** Woman, 59 years old, followed up for fibroadenoma in the right breast (mammography in November/2022-BI-RADS 2). In January 2023, she noticed a rapid and progressive increase in the right breast associated with dyspnea at rest. A chest computed tomography scan was performed, which showed a 12 cm transthoracic invasive lesion contiguous to the right breast, an endothoracic part, massive pleural effusion, and lung collapse. Core biopsy of the lesion and right thoracentesis were performed. The histopathological examination showed marked cytological atypia, high mitotic activity, infiltration of adipose tissue, and striated muscle compatible with high-grade sarcoma. Immunohistochemistry was negative for cytokeratin and epithelial membrane antigen (E29) and positive for smooth muscle actin (1A4). A new computed tomography scan showed an increase in the lesion (16.5 cm), right lung collapse, destruction of the sixth right costal arch, and in the left lung, basal atelectasis and metastatic implants. There was a previous history of total hysterectomy in 2020 due to abnormal uterine bleeding, probable leiomyomatosis, but the histopathological result was never recovered. After reviewing the medical records, the aforementioned examination was found, confirming a 9.0 cm uterine leiomyosarcoma with extensive necrosis. Given the findings, the diagnosis of progression of the uterine disease was confirmed, with sarcomatous metastasis to the breast, chest wall, and lung. After evaluation by the thoracic surgery and mastology sectors, surgery was ruled out and the patient was referred for oncological treatment after respiratory stabilization. Despite antibiotic therapy and thoracentesis, the patient developed septic shock and respiratory failure, resulting in death. **Conclusion:** This is an extremely rare case of metastatic sarcoma to the breast.

Keywords: sarcomas; neoplasm metastasis; breast neoplasms; leiomyosarcoma.

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Invasive carcinoma of the breast in males: a review of the literature

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Objective: To elucidate the rarity and particularities of male breast cancer, review the epidemiology and prevalence of the disease. **Methods:** A literature review was conducted on male breast cancer with search in the Department of Informatics of the Unified Health System (DATASUS) platform selecting the descriptors “breast neoplasms male,” “invasive breast cancer male,” “male breast cancer invasive,” and “male breast neoplasms invasive”. The inclusion criteria comprised studies in humans, male sex, and publications from the last 10 years. Research also included the databases PubMed, Google Scholar, Cochrane Library, and EBSCO. **Results:** This document reviewed the literature on invasive male breast carcinoma, a rare neoplasm that represents less than 1% of breast cancer cases. Due to its rarity, diagnosis is often delayed, compromising the prognosis. The study discussed risk factors such as hormonal imbalances, genetic mutations, and obesity. It also highlights that male breast cancer has a higher prevalence in older men and is mostly diagnosed in advanced stages. Therapy largely follows the protocols applied to female breast cancer; usually, the mastectomy is the standard surgical treatment, accompanied by hormonal therapies, chemotherapy, or radiotherapy. The epidemiological analysis through data collection from 2014–2023 revealed that, although male breast cancer is rare, its incidence has been increasing in Brazil. An average of the past 10 years showed that the Northeast region had the highest national incidence with 1.03 cases per 100,000 inhabitants, while the North region had the lowest with an average of 0.31. In absolute numbers, the Southeast region concentrated the cases, with a total of 2,866 subjects over 10 years. When analyzing the Southern region, Rio Grande do Sul state had the highest incidence with 0.90 cases per 100,000 inhabitants, while Santa Catarina had the lowest with 0.46. **Conclusion:** Despite the limitations, it is possible to recognize the importance of early diagnosis and public policies for the prevention of this neoplasm, as well as its particularities.

Keywords: breast neoplasms; male; men; breast neoplasms.

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Quality of life and sexuality in palliative breast cancer patients

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Objective: To examine the quality of life of breast cancer patients undergoing palliative care, with a special focus on the connection between intimate life and emotional balance, identifying the difficulties and influences that impact the maintenance of closeness and the affective manifestations of this group of patients. **Methods:** This is a study with a mixed approach, integrating qualitative and quantitative methods to capture individual perceptions and measurable data on quality of life and sexuality. The descriptive study was conducted by analyzing original articles in Portuguese, obtained from databases such as the Virtual Health Library, SciELO, PubMed, and Revista Eletrônica Acervo Saúde (Electronic Journal Health Collection), published between 2020 and 2024. The descriptors “palliative cancer patient”, “sexuality”, “palliative care”, “quality of life”, and “breast cancer” were used. Of the 15 publications available for critical analysis, seven were evaluated. **Results:** The impacts of the disease directly influence the patient’s life in a way that requires more humanized and holistic care. Therefore, the interdisciplinary team helps significantly in controlling the symptoms of palliative breast cancer patients, while also recognizing sexual needs. In addition, they provide essential emotional support, making care more welcoming, and guiding some strategies in consultations to improve the patient’s sexuality. These strategies include addressing sexuality as part of the treatment, guiding the patient to practice exercises to regain confidence in the sexual response, including partners in support programs, and making the maintenance of healthy habits, such as the regular practice of physical activities. **Conclusion:** Finally, it is clear that the late diagnosis of breast cancer combined with communication failures between professionals hampers the planning of the care provided. The literature therefore recommends using creative and multidisciplinary approaches to deepen the understanding of subjective aspects and ensure comprehensive care that leads to more positive therapeutic results.

Keywords: breast cancer; quality of life; sexuality; palliative care.

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The importance of palliative care in patients with breast cancer

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Objective: To analyze the importance of palliative care in patients with breast cancer. **Methods:** The search for articles was carried out on SciELO and PubMed databases, where ten original articles in Portuguese and English were found, published between 2020 and 2025, and using the descriptors “breast cancer” and “palliative care”, of which four were selected for review. **Results:** Palliative care in breast cancer aims to improve quality of life and alleviate symptoms regardless of the stage of the disease. For many years, this care was seen as a model that integrated the transition between life and death. More recently, it has come to be recognized as a broader approach, which focus on the quality of life of patients and their families in the face of the threat to continuity of life. The purpose is to alleviate suffering, which requires early identification, assessment, and appropriate treatment of the patient. This is accomplished through good communication, where attention is focused not only on pain but also on other problems of physical, psychosocial, and spiritual nature by listening to patient’s needs, promoting well-being, and supporting the family. According to a study carried out on breast cancer patients, it was found that palliative care contributed significantly to increasing their comfort, reducing anxiety and depression. In addition, it is also important to highlight that the early integration of this care into the treatment can favor the exercise of patient autonomy, as well as the participation of family members and health professionals in the decision-making process and shared planning of care in a comprehensive manner. **Conclusion:** In breast cancer, palliative care is an approach designed to improve the quality of life of patients and their families. Upon diagnosis, its objective is to prevent and alleviate suffering through early identification, appropriate assessment, and treatment of conditions, whether physical, psychosocial, or spiritual.

Keywords: integrative palliative care; breast neoplasms; women’s health.

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The relationship between spirituality and quality of life in patients with breast cancer

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Objective: To discuss the relationship between spirituality and quality of life in patients with breast cancer. **Methods:** A search was conducted on the SciELO and PubMed databases for original articles in Portuguese and English, published between 2023 and 2025, and using the descriptors “breast neoplasms” and “spirituality”. Seventeen articles were found, of which four were selected for review. **Results:** Worldwide, breast cancer is the most common neoplasm among women and brings intense and long-lasting physical, social, and above all, emotional challenges to diagnosed patients. The scope of spirituality in patients with breast cancer is necessary since it offers support, consolation, and purpose through a new meaning of existence, in order to combat insecurities and fears associated with the disease. Consequently, it strengthens the patient’s emotional aspect and ensures a better quality of life. In this sense, for cancer patients, spirituality acts to help the patient deal with the profound hopelessness that comes with the onset of the disease and proposes a new perspective on coping with breast cancer, in order to improve the patient’s psychological well-being and quality of life. **Conclusion:** The treatment of any and all pathologies is the result of the complex interaction between biological, clinical, and psychosocial factors. Based on this, the exercise of spirituality has been shown to be an important component in the treatment of patients with breast cancer by promoting comfort, encouragement, and support during the disease process, which positively impacts the patient’s quality of life and psychosocial well-being.

Keywords: breast neoplasms; spirituality; quality of life.

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Masson's tumor of the breast in a patient with invasive breast carcinoma: a rare benign-vascular lesion mimicking malignancy

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Introduction: Intravascular papillary endothelial hyperplasia (Masson's tumor) is a rare benign vascular lesion, infrequently found in the breast. Its presentation can mimic malignancy on imaging and gross examination, posing a diagnostic challenge, particularly in oncologic patients. **Objective:** The aim was to report a rare case of a cavernous hemangioma (Masson's tumor) associated with hematoma within the breast implant capsule, incidentally found during surgical treatment for recurrent invasive breast carcinoma. **Methods:** A descriptive case report was conducted of a patient diagnosed with recurrent invasive ductal carcinoma of the left breast associated with Masson's tumor. Clinical, radiological, surgical, and histopathological data were collected and analyzed. Additionally, a narrative literature review was performed using databases such as PubMed and Scopus, focusing on previously reported cases of Masson's tumor in the breast, particularly in association with implants or hematomas. **Results:** An 84-year-old post-menopausal woman with a history of left breast cancer presented with suspected local recurrence. Imaging revealed an additional intracapsular mass adjacent to the left breast implant. She underwent left breast segmentectomy and sentinel lymph node biopsy. Histopathological examination confirmed a 1.4×1.0×0.7 cm invasive ductal carcinoma, stage I (pT1c pN0(sn) M0), histologic grade 2, with clear surgical margins, and no lymph node involvement (0/3). Remarkably, a rare benign vascular lesion—cavernous hemangioma (Masson's tumor)—associated with hematoma was concurrently identified within the implant capsule. The patient received adjuvant radiotherapy and is currently on aromatase inhibitor therapy, with no signs of recurrence to date. **Conclusion:** Masson's tumor is a rare benign vascular lesion that can mimic malignancy, particularly in patients with a history of breast cancer. An incidental finding in this case highlighted the importance of thorough histopathological evaluation of periprosthetic lesions. Awareness of this entity is essential to avoid misdiagnosis and overtreatment.

Keywords: cavernous hemangioma; breast cancer; breast implant; recurrence; anatomy & histology.

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Malignant phyllodes tumor: double recurrence in a young patient

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Objective: To present a case of a dramatic evolution of malignant phyllodes tumor (PT) in a young patient, discussing the importance of radiological findings for an early diagnosis and correct therapeutic approach. **Methods:** A 23-year-old woman was admitted with a growing nodule in the left breast over a 5-month period, classified as BI-RADS 3 on mammography, evolving with hyperemia and local pain, leading to the hypothesis of mastitis. A solid-cystic lesion was seen on ultrasound, and a biopsy of the solid component was performed. The possibility of PT was raised due to rapid evolution and radiological findings, and the patient underwent tumorectomy, which indicated malignant PT. Four weeks later, the patient returned with a lesion similar to the initial and subsequently underwent mastectomy. She returned after seven weeks with lesions in the surgical wound, underwent a new tumorectomy, which indicated compromised margins in the anatomopathological evaluation. She is currently undergoing radiotherapy. **Results:** PT is a rare subtype of breast tumors, up to 2% of them. Most PTs are histologically benign, but when malignant, they have a higher recurrence and mortality rate. It presents as a fast-growing unifocal mass in pre-menopausal women and can be classified as benign, borderline, or malignant depending on its histological evaluation. The differentiation between PT and fibroadenoma, and between the histological types of PT, is virtually indistinguishable on mammography and breast ultrasound, but in addition to the clinical signs of fast evolution, breast magnetic resonance imaging can be useful in this aspect—appearing as hypointense on T1, variable signal on T2, and early contrast enhancement. **Conclusion:** Although a definitive diagnosis is complex, the diagnosis of PT, including its malignant variant, must be considered in the appropriate clinical-radiological context in order to achieve early treatment and improve prognosis.

Keywords: breast neoplasms; phyllodes tumor; diagnostic imaging.

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Breast implants-associated anaplastic large cell lymphoma (BIA-ALCL)

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Objective: The objective was to describe a case of breast implant-associated anaplastic large cell lymphoma (BIA-ALCL), a rare neoplasm whose low incidence limits the experience of mastology and plastic surgery services. Besides reporting the case, the purpose was to discuss treatment, prevention, and surveillance. **Methods:** A literature review was performed using the descriptors “anaplastic lymphoma” AND “breast implants” on the PubMed, LILACS, VHL, NICE, Cochrane Library, and SciELO databases. Among 336 publications, 66 articles from the last five years were selected. **Results:** The case refers to a 37-year-old woman, with a history of textured silicone implants five years ago and who began to present seroma in the right breast, increased volume, and ipsilateral mastalgia 6 months ago. After performing breast ultrasound, mammography, and breast magnetic resonance imaging, she underwent fine needle aspiration biopsy, and the fluid content was sent for oncotic cytology, fungal research, culture with antibiogram, bacterioscopy, and BAAR research, immunohistochemistry, and immunophenotyping, in which the results were negative. Cytology showed the presence of large and atypical lymphocytes. Immunohistochemistry revealed positivity for CD30 cells and negativity for CD246 (ALK-1), but immunophenotyping revealed 41% of anomalous lymphoid cells with co-expression of CD30, confirming the diagnosis of BIA-ALCL, in agreement with the presence of right anteropectoral seroma, and implant accommodation folds, without signs of contracture or capsular rupture. **Conclusion:** BIA-ALCL is a non-Hodgkin T-cell lymphoma, with an incidence of 1:30,000 women. The most accepted etiological hypothesis involves the formation of bacterial biofilm on the implant, generating chronic inflammation and malignant transformation of T cells. The patient underwent complete removal of the implant and fibrous capsule, and the seroma was sent for examination. Large and atypical cells were found in both. In general, treatment involves explantation, total capsulectomy and, in some cases, chemotherapy and/or radiotherapy. Regular clinical monitoring is essential for early diagnosis and improved prognosis.

Keywords: lymphoma; large-cell; anaplastic; breast implantation.

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Regression of giant renal angiomyolipoma in a patient under aromatase inhibitor therapy for breast cancer: a case report

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Objective: Angiomyolipoma (AML) is the most common benign renal stromal tumor; it is usually asymptomatic and diagnosed incidentally on imaging exams. Although considered a non-hormone-dependent lesion, recent studies have demonstrated the expression of hormone receptors and aromatase in AML, suggesting a possible estrogenic influence on its growth. **Methods:** This case report describes a 66-year-old female patient, diagnosed with invasive ductal carcinoma of the breast and renal AML, who underwent therapy with letrozole—a nonsteroidal aromatase inhibitor—and afterwards, showed a significant reduction in the size of the kidney tumor. **Results:** During diagnosis, breast ultrasound and magnetic resonance imaging identified a lesion classified as BI-RADS 5 in the right breast. Initial staging was T1N0M0, and physical examination revealed a one-centimeter nodule in the upper quadrant of the right breast, with no palpable lymph nodes. The patient underwent biopsy, concluding the diagnosis of grade 2 invasive ductal carcinoma, with expression of estrogen receptors, progesterone receptors, human epidermal growth factor receptor-type 2-negative (HER2-), and Ki67 in 5% of the tumor cells. During the general investigation, abdominal computed tomography and magnetic resonance imaging revealed the diagnosis of AML in the right kidney. Through treatment with the aromatase inhibitor (letrozole), the AML diagnosed initially with 7.2 centimeters showed a significant reduction to 4.0 centimeters. **Conclusion:** This case report highlights the possible estrogenic action on AML growth, a hypothesis corroborated by previous studies that demonstrated the expression of estrogen and progesterone receptors in most cases, as well as the expression of aromatase in the majority of AML. Although direct causality cannot be proven, clinical observations suggest that endocrine therapy exerts a modulating effect on AML. Future investigations are needed to confirm this association, especially in AML patients contraindicated for surgery or embolization.

Keywords: breast cancer; aromatase inhibitor.

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Primary breast amyloidosis: case report and literature review

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Objective: To describe a case of primary breast amyloidosis and present a literature review. This is an extremely rare condition, accounting for 0.5% of amyloidosis cases, which, in turn, represents 12.8% of primary amyloid tumors. It occurs mainly in elderly and post-menopausal women. It results in fibrillar layers of beta-pleated amorphous Congo protein deposition in the extracapsular space. **Methods:** As this is an uncommon diagnosis, there are few case series published in the literature since amyloidosis was first reported in 1973, highlighting the rare nature of this disease. In order to write the following case report, the authors performed a literature review on PubMed, LILACS, NICE, and clinical trial platforms, using the descriptors “primary amyloidosis” and “breast” and the Boolean operator AND. Among 55 publications, eight articles from the last five years were selected. **Results:** Female patient, 64 years old, with no family history of amyloidosis, primary history of breast cancer, diagnosed on mammographic screening due to an asymmetric focal area, with imprecise limits, irregular contours, in the union of the upper quadrants of the left breast (BI-RADS 4A), which persisted after selective compression. Magnetic resonance imaging showed non-nodular enhancement of 1.2 cm. The patient underwent pre-surgical marking with iodine seed and subsequent radioguided occult lesion localization (ROLL). The anatomopathological examination and the search for amyloid deposits by Congo red in polarized light revealed that it was an amyloid tumor of the breast. **Conclusion:** The risk factors for primary breast amyloidosis are not well known, but may be associated with autoimmune disease, lymphoproliferative disease, and advanced age. There is no evidence that family history and breast density are related. The recommended treatment is usually surgical removal of the suspected area, which usually results in good outcome.

Keywords: primary amyloidosis; breast.

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Primary and secondary angiosarcoma: a case report

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Introduction: Angiosarcoma is a rare malignant vascular neoplasm belonging to the sarcoma group. It is a highly infiltrative tumor with a high local recurrence rate and hematogenous metastasis. **Objective:** To report a case in order to analyze the treatment of a rare malignant vascular neoplasm. **Methods:** This is a case report based on a retrospective analysis of the medical records of a patient treated at the mastology outpatient clinic of Hospital Barão de Lucena in Recife, Pernambuco. **Results:** The patient is F.S.A, a 43-year-old female, from Ribeirão, Pernambuco, menarche at 11 years old, G1P1, with no family history of breast cancer. She was referred to the mastology outpatient clinic at Hospital Barão de Lucena due to a tumor in the left breast in 2020. Ultrasound revealed simple cysts in both breasts and a lipoma in the left breast at 11 o'clock, measuring 2.4x1.0x2.2 cm, classified as Breast Imaging Reporting and Data System (BI-RADS) 4. Core biopsy revealed a vascular and spindle cell lesion with mild nuclear atypia and compromised margins. Immunohistochemistry was conducted, revealing CD34 and CD31 antibodies and 10% Ki-67 expression. A radical left mastectomy with reconstruction using a lipo-grafted latissimus dorsi flap was performed. After surgery, the patient underwent chemotherapy and radiotherapy as adjuvant therapy. The patient returned on January 29, 2024 for a follow-up visit, reporting a skin discoloration between the skin and the latissimus dorsi muscle flap in the sternal region. A histopathological examination was requested, which confirmed a well-differentiated angiosarcoma. A left segmental mastectomy was performed with immediate reconstruction using an inferior pedicle flap. **Conclusion:** Although radiotherapy is a secondary risk factor for angiosarcoma, it remains an important form of adjuvant treatment. Surgery is the best option in this case.

Keywords: breast cancer; angiosarcoma; soft tissue neoplasms.

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“*Bronquinho*”: a low-cost alternative for fat grafting in breast reconstructions within the Brazilian Unified Health System

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Objective: To describe a low-cost alternative for fat grafting in breast reconstructions within the Brazilian Unified Health System (SUS). **Methods:** This study presents a descriptive analysis of an alternative technique for adipose tissue collection in reconstructive surgeries. **Results:** Autologous fat grafting is widely employed in reconstructive surgeries following cancer treatment, owing to its capacity to correct irregularities and restore tissue integrity. It improves functional and aesthetic quality of life in post-mastectomy patients. The conventional technique involves liposuction from a donor site using a 60 mL syringe coupled with a liposuction cannula. Negative pressure is generated by the manual movement of the syringe plunger by the operating surgeon. Subsequently, fractionated fat is retro-injected into the subcutaneous tissue of the reconstruction site. However, the cost of materials, prolonged surgical duration, and consequent surgeon fatigue pose significant challenges. The “*bronquinho*,” a medical device typically utilized for airway secretion collection during bronchoscopies and endoscopies, can also generate a negative pressure system without requiring manual actuation. This allows for spontaneous, atraumatic fat aspiration, contributing to the preservation of adipocytes. Furthermore, it is economically accessible. **Conclusion:** Considering the aesthetic and regenerative advantages of fat grafting, the application of the *bronquinho* in breast reconstruction fat grafting presents a promising alternative. This method optimizes surgical time, reduces surgeon physical strain, and demonstrates good efficacy and safety. Additionally, its affordability makes it suitable for patients within the SUS. Further research is warranted to validate the effectiveness of this technique in this context.

Keywords: transplantation; mammoplasty.

