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1022 – Glucagon-like peptide-1 receptor agonists and breast cancer: current evidence and clinical perspectives

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Introduction: Breast cancer (BC) is the most common neoplasm in women. Obesity (body mass index ≥ 30 kg/m²) affects 1 in 8 individuals and coexists with BC in 19.6% of cases at diagnosis. Obesity is associated with higher BC incidence, worse prognosis, and is worsened by treatment-related weight gain in up to two-thirds of patients. Glucagon-like peptide-1 receptor agonists (GLP-1RA) effectively promote weight loss and reduce cardiometabolic risk, raising interest in their role among BC patients.

Objective: To assess the impact of GLP-1RAs on BC patients.

Methods: A narrative review was conducted, including English-language studies from the databases PubMed, Embase, and LILACS, and gray literature (2016–2026), using the terms “breast neoplasms”, “breast cancer”, “GLP-1 receptor agonists”, and “anti-obesity agents.” Of the 46 records identified, 27 were included following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-based selection.

Results: In BC patients, GLP-1RAs induce modest weight loss, potentially attenuated by endocrine therapy. Experimental studies show promising antiproliferative effects. Exenatide and liraglutide inhibit luminal cell line proliferation via AMPK α 2/miR-27a activation and NF- κ B inhibition. Semaglutide decelerates triple-negative growth in preclinical models by dendritic cell maturation and CD8+ cytotoxicity. However, supraphysiologic liraglutide concentrations promote proliferation and angiogenesis via the molecular mediators NOX4, ROS, and VEGF, accelerating tumorigenesis and underscoring the need for clinical validation of these divergent effects. Beyond direct effects, GLP-1RAs modulate the tumor microenvironment via adipokine changes, reduced systemic inflammation, and improved insulin resistance, factors tied to tumor progression. Retrospective studies show that GLP-1RA-induced metabolic benefits and weight loss mitigate obesity-driven hormonal imbalance, reducing BC risk and disease progression and enhancing treatment response, including lower circulating tumor DNA (ctDNA) levels.

Conclusion: GLP-1RA use in BC patients promotes significant weight loss with potential indirect prognostic impact. However, effects on tumor biology are inconsistent; thus, though promising as an adjuvant metabolic strategy, their oncologic role remains inconclusive. Accordingly, gaps regarding the interactions of these agents with different tumor subtypes are expected to be addressed, directing their use toward improved oncologic outcomes in well-selected patients.

Ethics: Public data – Literature review.

Keywords: breast neoplasms; glucagon-like peptide-1 receptor agonists; anti-obesity agents; breast cancer.