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1134 – Targeted therapies and immunotherapies in the treatment of triple-negative breast cancer

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Introduction: Triple-negative breast cancer (TNBC) accounts for 10–15% of cases and is characterized by the absence of hormone receptors and low HER2 expression, which limits the use of endocrine or anti-HER2 therapies. It is an aggressive subtype, usually associated with poorer prognosis than other breast cancers. Since TNBC exhibits high immunogenicity, with increased PD-1 expression and tumor-infiltrating lymphocytes, immunotherapy has become a relevant therapeutic strategy.

Objectives: To evaluate the efficacy and role of targeted therapies and immunotherapies in TNBC, highlighting their mechanisms of action, clinical indications, and impact on patient outcomes.

Methodology: This systematic review followed PRISMA 2020. The PubMed database was searched using MeSH terms related to targeted therapies and immunotherapies for TNBC, including studies published from 2013 to 2025. Of the 62 articles identified, 50 met the inclusion criteria.

Results: TNBC appears to be one of the breast cancer subtypes most suitable for immunotherapy due to its high immunogenicity; however, immune checkpoint inhibitor (ICI) monotherapy has shown limited benefit. Better outcomes have been achieved by combining ICIs with chemotherapy. Pembrolizumab plus chemotherapy has become a standard treatment for both early-stage disease (II/III) and metastatic PD-L1-positive disease. TNBC is also highly heterogeneous, with multiple molecular subtypes and a complex tumor microenvironment, which limits the response to monotherapy and supports personalized treatment. PARP inhibitors, especially olaparib and talazoparib, are a major targeted option for patients with metastatic TNBC and germline BRCA mutations. Based on synthetic lethality, they represent a successful example of translational research and are now well established, with studies exploring earlier use and new combinations.

Conclusion: TNBC remains a major therapeutic challenge. Although immunotherapy alone has shown modest results, its combination with chemotherapy, especially pembrolizumab, has changed clinical practice. PARP inhibitors have also become essential for BRCA-mutated disease. Future TNBC management will likely rely on increasingly combined and personalized strategies.

Ethics: Public data – Literature review.

Keywords: triple negative breast neoplasms; molecular targeted therapy; immunotherapy.