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Editorial

Predictive models and therapeutic strategies for breast cancer

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Breast cancer is the most prevalent female malignant tumor and significantly threatens the health of affected individuals.[1] Recent progress in the identification of the molecular subtypes of breast cancer has ensured more personalized and precise treatment strategies.[2] This has presented new challenges and opportunities in treatment options and disease prognosis. This Special Issue, titled "Recent advances in breast cancer research", highlights the latest advances in clinical, basic, and translational research on breast cancer. It explores tumor resistance mechanisms and microenvironments to enhance our understanding of drug efficacy and safety.

This issue includes one original research and two review articles on novel predictive models and therapy selection in breast cancer. Using a comprehensive dataset from the Surveillance, Epidemiology, and End Results (SEER) database and a validation cohort from a hospital in northwest China, Ning et al.[3] developed an innovative survival prediction model for patients with *de novo* metastatic breast cancer. The model incorporated a wide range of clinical and pathological factors; the resulting nomogram showed superior predictive accuracy compared to the traditional tumor, node, and metastasis (TNM) staging system by the American Joint Committee on Cancer (AJCC), providing clinicians with a powerful tool for more accurate prognosis assessments. Apart from novel prediction models, several breakthroughs have been made in clinical and translational research on breast cancer drugs as well, further enriching treatment modalities. Nevertheless, comprehensive evidence comparing the efficacy and safety of first-line therapeutic options for metastatic triple-negative breast cancer (mTNBC) remains insufficient. Interestingly, a network meta-analysis conducted by Shi et al.[4] showed that cisplatin combined with nab-paclitaxel or paclitaxel could be the preferred first-line treatment for mTNBC. Furthermore, for PD-L1 (Programmed cell death ligand 1) and breast cancer gene (*BRCA*) mutation-positive tumors, atezolizumab/pembrolizumab combined with nab-paclitaxel and talazoparib is an effective treatment option. Advances in targeted therapies and immunotherapies have significantly improved the precision of treatment strategies and survival in patients with breast cancer.[5] However, there are still significant challenges that need to be overcome, including the selection of patients who can benefit from a certain treatment strategy, and the management of treatment-related adverse events. In this context, a meta-analysis was conducted to investigate the risk of development of interstitial lung disease (ILD) associated with PD-1 (Programmed cell death 1) and PD-L1 inhibitors in breast cancer treatment.[6] The findings of the analysis indicate that breast cancer patients treated with PD-1 inhibitors have a higher risk of ILD than those treated with PD-L1 inhibitors, emphasizing the need for careful patient monitoring and risk management.

The articles in this Special Issue not only deepen our understanding of breast cancer diagnosis and treatment but also provide some reference for future strategies. Through the comprehensive analyses presented in this Special Issue, we aim to create a long-term impact on breast cancer research and clinical practice, and in the implementation of precision medicine and personalized treatment strategies, fostering innovation in breast cancer management.

Authors contribution

Lei Liu: writing - original draft, writing - reviewing and editing; Peng Yuan and Xue Wang: reviewing and editing. All authors were responsible for the critical review of the manuscript.

Ethics statement

None.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors declare that generative artificial intelligence (AI) and AI assisted technologies were not used in the writing process or any other process during the preparation of this manuscript.

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Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability statement

The datasets used in the current study are available from the corresponding author on reasonable request.

References

1. Siegel RL, Miller KD, Wagle NS, Jemal A. Cancer statistics, 2023. *CA A Cancer J Clin*. 2023;73:17–48. https://doi.org/10.3322/caac.21763.
2. Loibl S, Poortmans P, Morrow M, Denkert C, Curigliano G. Breast cancer. *Lancet*. 2021; 397:1750–1769. https://doi.org/10.1016/S0140-6736(20)32381-3.
3. Ning L, Liu Y, Hou Y, et al. Survival nomogram for patients with *de novo* metastatic breast cancer based on the SEER database and an external validation cohort. *Cancer Pathog Ther*. 2023;1:253–261. https://doi.org/10.1016/j.cpt.2023.07.004.
4. Shi M, Li Z, Shen G, et al. Efficacy and safety of first-line treatment for metastatic triple-negative breast cancer: a network meta-analysis. *Cancer Pathog Ther*. 2024;2: 81–90. https://doi.org/10.1016/j.cpt.2023.06.002.
5. Liang Y, Zhang H, Song X, Yang Q. Metastatic heterogeneity of breast cancer: molecular mechanism and potential therapeutic targets. *Semin Cancer Biol*. 2020;60: 14–27. https://doi.org/10.1016/j.semcancer.2019.08.012.
6. Guo L, Lin X, Lin X, et al. Risk of interstitial lung disease with the use of programmed cell death 1 (PD-1) inhibitor compared with programmed cell death ligand 1 (PD-L1) inhibitor in patients with breast cancer: a systematic review and meta-analysis. *Cancer Pathog Ther*. 2024;2:91–102. https://doi.org/10.1016/j.cpt.2023.08.002.

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