Breast cancer is the most commonly diagnosed cancer and is the leading cause of cancer death in women worldwide. Both talazoparib and olaparib are approved by the US Food and Drug Administration for treating BRCA (breast cancer 1, early onset)-mutated HER2-negative metastatic or advanced breast cancer. However, the optimal choice of first-line treatment has not been determined.

We performed a network meta-analysis (NMA) to compare single-agent PARPi for advanced breast cancer.

The outcomes of interest were efficacy, safety, and acceptability. The primary efficacy outcome of interest was progression-free survival (PFS), the primary safety outcome of interest was major all-grade and high-grade (grade 3-4) treatment-related adverse events (AEs), and the primary acceptability outcome of interest was discontinuation due to AEs.

The secondary efficacy outcomes included overall survival (OS) and objective response rate (ORR). The secondary safety outcome was defined as all-grade and high-grade (grade 3-4) non-hematologic AEs (fatigue, headache); the secondary tolerability outcome was impact on quality of life (QoL).

Overall, the database search identified 15,831 studies; 4,548 studies were excluded due to duplicate records and 11,238 studies were excluded based on the selection criteria after reading the title and abstract. Subsequently, 45 potentially relevant full-text articles were reviewed. After applying all the eligibility criteria, two RCTs, the EMBRACA and OlympiAD, were included in our NMA.

Statistical Analysis

NMA was carried out using a random-effect model within a Bayesian framework and executed by R software using the gemtc package (version 3.5.1; R Foundation, Vienna, Austria)(20,21). To determine whether the results affected by study characteristics, we performed subgroup analyses for primary efficacy outcomes according to the following variables: previous chemotherapy, previous platinum-based therapy, hormone receptor status, and BRCA mutation type. Two-sided P-values of <0.05 were considered statistically significant.

CONCLUSION

Both talazoparib and olaparib have similar efficacy, safety, and acceptability in patients with BRCA-mutated HER2-negative metastatic or advanced breast cancer. Well-designed head-to-head randomized controlled trials with large samples are suggested to determine the optimal treatment choice.

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