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### Poly (ADP-ribose) polymerase (PARP) inhibitor regimens for platinum-sensitive ovarian cancer in phase III randomized controlled trials: A systematic review and network meta-analysis

#### Abstract:

**Background:** Poly (ADP-ribose) polymerase (PARP) inhibitors offer a new treatment option for ovarian cancer. To compare the primary efficacy and safety of different PARP inhibitors in platinum-sensitive ovarian cancer.

**Methods:** We searched multiple databases from 1990 to 2023. Only multicenter, randomized, double-blind, phase III-controlled trials for first-line maintenance or post-relapse treatment were included. The primary efficacy outcome was progression-free survival (PFS) and overall survival (OS), and the primary safety outcome was treatment-emergent adverse events (TEAEs). This trial was registered under PROSPERO (CRD42024511248).

**Results:** A total of 9 eligible trials with 5285 patients treated with 4 different PARP inhibitors were reviewed. For PFS, the median duration was significantly longer in patients who received Niraparib than placebo (hazard ratio (HR)=2.93, 95% CI 1.78–4.82). The median duration was significantly shorter in patients who received Rucaparib and Olaparib than Niraparib (HR=0.33 (0.18–0.62) and 0.32 (0.19–0.53), respectively). For TEAE, the Niraparib-based regimen tended to be associated with a lower risk compared with placebo (HR=0.13 (0.08–0.20)). Rucaparib, Olaparib, and Veliparib were associated with a higher risk compared to Niraparib. For OS, the difference was not statistically significant in patients receiving Olaparib + Bevacizumab compared to Olaparib or placebo.

**Conclusions:** Our study showed that Niraparib was the most effective regimen with the lowest risk of TEAE in patients with platinum-sensitive ovarian cancer. Veliparib came in second. Rucaparib was associated with the highest risk of TEAE. Our findings are useful for improving guidelines and developing clinical or national policies for platinum-sensitive ovarian cancer.

#### Biography

**Xiaolian Peng** completed a master's degree at the age of 39 years from Central South University and participated in the doctoral examination of gynecologic Oncology at Peking Union Medical College in 2015. She is the associate chief physician of gynecology and obstetrics with many years of clinical experience, a member of ESMO, ESGO, and ASGO, a reviewer of the Journal of Gynecologic Oncology and World Journal of Gastrointestinal Surgery, and the class teacher of the Little Black House Clinical Scientist College. She loves literature and music her research area is gynecological oncology.