Study of the effect of olaparil on the treatment of platinum-sensitive advanced recurrent ovarian cancer

Liqiang Han

First Hospital of Shanxi Medical University , Shanxi Province Taiyuan City , 030001;

Abstract: Objective: To analyze the effect of olaparil on the treatment of platinum-sensitive advanced recurrent ovarian cancer. Methods: 82 patients with platinum-sensitive recurrent ovarian cancer were selected and divided into control and study groups with 41 patients in each group. Patients in the trial group received adjuvant therapy with oral olapparil tablets within 8 weeks after the administration of 6 courses of chemotherapy on the TC regimen, while the control group did not receive special drugs after 8 weeks of chemotherapy with the TC regimen. After the treatment, the treatment effect and treatment quality of the two groups were compared. Results: After treatment, CA125 and HE4 decreased significantly in all patients, and the difference was significant (P <0.05); the incidence of oral mucositis in the test group was lower than that in the control group (P <0.05). The incidence of adverse reactions and QOL scores in the other two groups were not significant (P> 0.05). Conclusion: The treatment of platinum-sensitive recurrent ovarian cancer can significantly improve the objective remission and disease control effect, and reduce the level of serum tumor markers.

Keywords: platinum-sensitive, recurrent ovarian cancer, olaparil; CA125, HE4, treatment effect

DOI:10.69979/3041-0843.24.2.038

Ovarian cancer is one of the most dangerous types of gynecological malignant tumors, posing a serious threat to women's life and health. According to the latest data, the number of new cases of ovarian cancer in 2024 is about 340,000 [1]. Given their inconspicuous early symptoms and lack of specific diagnostic markers, most patients are diagnosed in a late stage. Moreover, ovarian cancer patients are prone to chemotherapy resistance after treatment, resulting in an extremely poor prognosis, with a 5-year survival rate of only 30% to 40% [2]. Therefore, the treatment of ovarian cancer has been a focus of research in the field of gynecological oncology. Traditional treatment strategies for ovarian cancer mainly include surgery, chemotherapy, and maintenance therapy. Surgery is the basis of ovarian cancer treatment and aims to remove tumor tissue as much as possible and reduce tumor burden. However, due to the occult and advanced diagnostic characteristics of ovarian cancer, surgery is often difficult to completely remove cancer cells, so postoperative chemotherapy becomes a key link. Chemotherapy interferes with DNA synthesis and cell division of cancer cells by using specific chemicals, inhibiting their growth and spreading [3]. Although chemotherapy extends the survival of patients to some extent, it has large side effects and is prone to drug resistance. In recent years, maintenance therapy has made significant progress in the treatment of ovarian cancer, especially for the application of polyadenosine diphosphate ribose polymerase (PARP) inhibitors [4]. Previous experimental studies have driven the widespread use of PARP inhibitors in the maintenance treatment of ovarian cancer and have been included in the 2024 National Comprehensive Cancer Network (NCCN) guidelines. In recent years, olaparil has been widely used in the treatment of ovarian cancer. By inhibiting the activity of PARP enzyme, olaparil impedes the DNA repair mechanism of cancer cells, thus inducing apoptosis, and has a significant killing effect on tumor cells bearing BRCA gene mutations. In the treatment of ovarian cancer, olaparil is mainly used for maintenance therapy after platinum-based chemotherapy, aiming to prolong the progression-free survival (PFS) and overall survival (OS) [5] in patients. In the maintenance treatment of platinum-sensitive recurrent ovarian cancer, olaparil also showed significant efficacy [6]. In this study, 82 patients with platinum-sensitive recurrent ovarian cancer were selected to analyze the treatment effect of olaparil. It is reported as follows.

1 Data and methods

1 Clinical Data 82 patients with platinum-sensitive recurrent ovarian cancer admitted from June 2023 to June 204 were selected as study subjects, which were divided into control group and study group according to random method, with

41 patients in each group. The age of the control group was 32-81 years, mean (62.33 ± 2.01) years; duration 1-3 years, mean (2.13 ± 0.80) years; the study group was 37 to 78 years, mean (58.51 ± 2.81), duration 1-3 years, mean (2.25 ± 0.80) years. Compared on age and disease duration, the difference was not significant (P> 0.05). Inclusion criteria: All patients were diagnosed as platinum-sensitive recurrent ovarian cancer.; Good understanding of treatment plan and recovery measures; family members sign voluntary consent with patient; in good mental state and actively cooperate with medical staff. Exclusion criteria: patients with mental illness or previous mental illness, unable to communicate; patients with severe allergic reaction to the treatment; patients with other malignant tumors;

2 Methods After admission, 82 patients received second-line chemotherapy, and the chemotherapy drugs used were carboplatin and paclitaxel. After a period of clinical treatment, the efficacy of the patients was evaluated. In the control group, necessary symptomatic treatment was performed without the use of special anti-tumor drugs; the test group administered olapalil orally within 8 weeks twice a day for 3 months.

3 Observation IndicBefore and after ① treatment, 5 mL of venous blood was extracted, serum was isolated by centrifugation, and the levels of sugar antigen 125 and HE4 were detected by chemiluminescence.② Statistics of adverse reactions in patients.③ Before and after the treatment, the patients were assessed for their quality of life.

4 Statistical Methods Statistics analyzed the data using SPSS 27.0 statistical software. Measurement data are expressed as mean ± standard deviation (x ± s) by t-test; and count data are tested by χ 2. A P <0.05 indicates that the differences were statistically significant.

2 bear fruit

1 Comparison of tumor markers between the two groups Before treatment, CA125 and HE4 levels between the two groups showed no difference (P> 0.05); after treatment, CA125 levels and HE4 were significantly reduced in all patients, and the study group decreased more, with significant difference between groups (P <0.05). See Table 1

Table 1 Comparison of CA125 and HE4 levels (x ± s, U / mL).

group	Exampl enumber	CA125(IU/L)		HE4(pmol/L)	
		pretherapy	post-treatment	pretherapy	post-treatment
control group	41	96.53±8.24	61.44±8.28	278.93±43.52	175.55±34.12
test team	41	94.68±9.02	38.57±6.94	281.20±43.54	121.25±24.40
t		0.037	4.654	0.221	5.236
P		0.769	0.025	0.814	0.013

P <0.05 in the control group.

2 Comparison of the occurrence of adverse reactions between the two groups The incidence of adverse reactions between the two groups (P> 0.05), but the incidence of oral mucositis in the test group was lower than that in the control group (P <0.05). See Table 2.

Table 2.

group	Example number	arrest of bone marrow	Liver function injury	Oral mucosal inflammation
control group	41	26	7	12
test team	41	25	6	21
χ 2		0.052	0.088	4.108
p		0.820	0.767	0.043

3 Comparison of quality of life between the two groups of quality of life questionnaire (QOL) scores, there was no significant difference before and after treatment (P> 0.05). See Table 3.

Table 3 Comparison of quality of life before and after treatment in the two groups (x ± s, points)

group	Example number	pretherapy	post-treatment
control group	41	47.85±1.75	44.76±1.75
test team	41	48.26±1.65	45.76±1.20
t		1.153	1.411

p	point three two three	point three one two

3 discuss

Ovarian cancer is one of the worst prognosis types among gynecological malignancies. Although its incidence is lower than that of cervical cancer and endometrial cancer, the 5-year survival rate is the lowest, only 31%, and the recurrence rate is 70% higher. In recent years, with the deeper understanding of the molecular biological mechanism of ovarian cancer, the application of targeted therapy, especially PARP inhibitors, has brought new hope and breakthrough in [6] for the treatment of ovarian cancer. Platinum-sensitive recurrent ovarian cancer is an important area in the treatment of ovarian cancer, and its therapeutic strategies have made remarkable progress in the past few years, especially the application of PARP inhibitors, bringing new hope for patients. The results of this study suggest that the [7]. The results of this study showed that, CA125 and HE4 decreased in all patients after treatment, and the decrease was greater, with the difference between groups (P <0.05), the incidence of oral mucositis in the test group was lower than that in the control group (P <0.05). The incidence of adverse reactions and QOL scores in the other two groups were not significant (P> 0.05). From this point of view, the treatment of platinum-sensitive advanced ovarian cancer patients combined with olaparil after chemotherapy can improve its clinical effect and truly curb the growth of tumor cells. As, PARP inhibitor induced apoptosis of cancer cells by preventing DNA damage repair in tumor cells by inhibiting the activity of PARP enzymes. Olaparil has shown significant clinical benefits in the treatment of platinum-sensitive recurrent ovarian cancer (PSROC). The results of the SOLO-2 study showed that in PSROC patients bearing BRCA germline mutations, olafparide maintenance monotherapy significantly prolonged progression-free survival (PFS) with a median PFS of 19.1 months compared with 5.5 months [8] in the placebo group. BRCA mutation status is an important biomarker for predicting the efficacy of olaparil. In the SOLO-2 study, patients with BRCA mutations treated with olaparib showed a significant reduction in the risk of disease progression or death. However, even in patients with no BRCA mutations, olaparil showed some efficacy, suggesting that homologous recombination deficiency (HRD) status may be a broader predictive marker for [9]. The safety of olaparil was validated in several studies. Both SOLO-2 and L-MOCA studies showed that olaparil had less toxic effects and well tolerated [10]. However, combination therapy may increase the incidence of adverse events, which requires careful management during treatment. Future studies should focus on how to optimize combination regimen to reduce adverse effects while improving efficacy. Despite the remarkable progress of olapparil in PSROC therapy, further exploration of its efficacy and optimal timing of use in different patient populations is needed. Therefore, future studies should focus more on the optimal timing of PARP inhibitors and how to screen the patient population most likely to benefit by biomarkers.

Moreover, with a deeper understanding of the biological mechanisms of ovarian cancer, new targets and therapeutic strategies are constantly emerging. For example, the combination of immunotherapy and PARP inhibitors may bring new breakthroughs in ovarian cancer treatment. Future studies should further explore the clinical application potential of these novel targets and combination treatment strategies. Olaparil, as a representative of PARP inhibitors, has demonstrated significant clinical benefit in the maintenance treatment of platinum-sensitive recurrent ovarian cancer, especially in BRCA mutation and HRD positive patients. Exploration of combination treatment strategies provides more treatment options for patients. However, how to optimize treatment options, improve patient tolerance, and explore new biomarkers are still important directions for future research. As more research data accumulate, olaparil is expected to provide a longer survival period and a better quality of life for ovarian cancer patients.

References

[1] Barnard ME, Farland LV, Yan B, Wang J, Trabert B, Doherty JA, Meeks HD, Madsen M, Guinto E, Collin LJ, Maurer KA, Page JM, Kiser AC, Varner MW, Allen-Brady K, Pollack AZ, Peterson KR, Peterson CM, Schliep KC. Endometriosis Typology and Ovarian Cancer Risk. JAMA. 2024 Aug 13;332(6):482-489. doi: 10.1001/jama.2024.9210. .
[2] Jamali Z, Razipour M, Zargar M, Ghasemnejad-Berenji H, Akrami SM. Ovarian cancer extracellular vesicle biomarkers. Clin Chim Acta. 2025 Jan 15;565:120011. doi: 10.1016/j.cca.2024.120011. Epub 2024 Oct 20.
[3] Pullen RL Jr. Ovarian cancer. Nursing. 2024 Jun 1;54(6):17-28. doi: 10.1097/NSG.0000000000000002. Epub 2024 May 17.

[4] Richardson DL, Moore KN, Vergote I, Gilbert L, Martin LP, Mantia-Smaldone GM, Castro CM, Provencher D, Matulonis UA, Stec J, Wang Y, Method M, O'Malley DM. Phase 1b study of mirvetuximab soravtansine, a folate receptor alpha (FRα)-targeting antibody-drug conjugate, in combination with carboplatin and bevacizumab in patients with platinum-sensitive ovarian cancer. Gynecol Oncol. 2024 Jun;185:186-193. doi: 10.1016/j.ygyno.2024.01.045. Epub 2024 Mar 5.
[5] Ji S, Chen L, Yu Y, Chen X, Wei L, Gou L, Shi C, Zhuang S. A comprehensive comparison of PARP inhibitors as maintenance therapy in platinum-sensitive recurrent ovarian cancer: a systematic review and network meta-analysis. J Ovarian Res. 2025 Jan 30;18(1):18. doi: 10.1186/s13048-025-01599-1. PMID: 39885555;
[6] Zhou Y, Xu J. Impact of PARP inhibitors on progression-free survival in platinum-sensitive recurrent epithelial ovarian cancer: a retrospective analysis. World J Surg Oncol. 2024 Oct 21;22(1):276. doi: 10.1186/s12957-024-03562-8. PMID: 39434111;
[7] Lorusso D, Mouret-Reynier MA, Harter P, Cropet C, Caballero C, Wolfrum-Ristau P, Satoh T, Vergote I, Parma G, Nøttrup TJ, Lebreton C, Fasching PA, Pisano C, Manso L, Bourgeois H, Runnebaum I, Zamagni C, Hardy-Bessard AC, Schnelzer A, Fabbro M, Schmalfeldt B, Berton D, Belau A, Lotz JP, Gropp-Meier M, Gladieff L, Lück HJ, Abadie-Lacourtoisie S, Pujade-Lauraine E, Ray-Coquard I. Updated progression-free survival and final overall survival with maintenance olaparib plus bevacizumab according to clinical risk in patients with newly diagnosed advanced ovarian cancer in the phase III PAOLA-1/ENGOT-ov25 trial. Int J Gynecol Cancer. 2024 Apr 1;34(4):550-558. doi: 10.1136/ijgc-2023-004995. PMID: 38129136;
[8] Schouten PC, Schmidt S, Becker K, Thiele H, Nürnberg P, Richters L, Ernst C, Treilleux I, Medioni J, Heitz F, Pisano C, Garcia Y, Petru E, Hietanen S, Colombo N, Vergote I, Nagao S, Linn SC, Pujade-Lauraine E, Ray-Coquard I, Harter P, Hahnen E, Schmutzler RK. Olaparib Addition to Maintenance Bevacizumab Therapy in Ovarian Carcinoma With BRCA-Like Genomic Aberrations. JAMA Netw Open. 2024 Apr 1;7(4):e245552. doi: 10.1001/jamanetworkopen.2024.5552.
[9] Miao H, Meng H, Zhang Y, Chen T, Zhang L, Cheng W. FSP1 inhibition enhances olaparib sensitivity in BRCA-proficient ovarian cancer patients via a nonferroptosis mechanism. Cell Death Differ. 2024 Apr;31(4):497-510. doi: 10.1038/s41418-024-01263-z. Epub 2024 Feb 19.
[10] Ganz PA, Bandos H, Španić T, Friedman S, Müller V, Kuemmel S, Delaloge S, Brain E, Toi M, Yamauchi H, de Dueñas EM, Armstrong A, Im SA, Song CG, Zheng H, Sarosiek T, Sharma P, Geng C, Fu P, Rhiem K, Frauchiger-Heuer H, Wimberger P, t'Kint de Roodenbeke D, Liao N, Goodwin A, Chakiba-Brugère C, Friedlander M, Lee KS, Giacchetti S, Takano T, Henao-Carrasco F, Virani S, Valdes-Albini F, Domchek SM, Bane C, McCarron EC, Mita M, Rossi G, Rastogi P, Fielding A, Gelber RD, Scheepers ED, Cameron D, Garber J, Geyer CE, Tutt ANJ. Patient-Reported Outcomes in OlympiA: A Phase III, Randomized, Placebo-Controlled Trial of Adjuvant Olaparib in gBRCA1/2 Mutations and High-Risk Human Epidermal Growth Factor Receptor 2-Negative Early Breast Cancer. J Clin Oncol. 2024 Apr 10;42(11):1288-1300. doi: 10.1200/JCO.23.01214. Epub 2024 Feb 1.