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Objective: Poly (ADP-ribose) polymerase (PARP) inhibitors are used to treat patients with defective homologous recombination repair (HRR), such as deleterious mutations in BRCA1 or BRCA2. Reversion mutation and the subsequent restoration of HRR pathway has been suggested as main resistance mechanism. However, reversion mutations do not fully explain the resistance mechanism. In this study, we enrolled PARP inhibitor treated ovarian cancer patients with germline or somatic BRCA mutation (n=71) and analyzed circulating tumor DNA (ctDNA) obtained from relapsed patients after progression on PARP inhibitor (n=16).

Methods: From whole blood samples, ctDNA was extracted from plasma and germline DNA from buffy coat. Extracted DNA was target enriched with panel targeting 531 cancer-related genes, and the resultant library was sequenced using the Illumina Novaseq 6000 sequencing system. The sequencing data was analyzed using our custom analysis pipeline.

Results: Among 16 relapsed patients, 11 patients had both before PARP inhibitor treatment and relapsed samples, 5 patients had only relapsed sample. Every patient had tissue NGS data. Analysis of ctDNA samples showed ctDNA-specific variants. BRCA reversion was found in two patients (12.5%). Analysis of patient-matched paired samples before and after progression on PARP inhibitor showed an increase in intratumoral heterogeneity in post-progression samples. New variants in genes that are linked to DNA repair pathway were found to be associated with increase tumor mutation burden.

Conclusion: In this study, we demonstrated profiling of ctDNA, a less invasive assay, can efficiently offer information on tumor heterogeneity and predict PARP inhibitor resistance.

Poster (O39)

Rare Tumors & Metastatic Tumors

<https://doi.org/10.3802/jgo.2021.32.S1.O39>

Mature cystic teratoma of the ovary with carcinoid component: a case report

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Objective: Learnig about clinical manifestation and diagnosis of mature teratoma cases with malignant transformation.

Methods: A 36 years old woman, P2A0, was referred from a primary hospital because of post-operative pathological examination revealed a malignancy. Earlier, she underwent bilateral salpingo-oophorectomy (BSO) at a primary hospital for indication benign ovarian cyst. After BSO procedure, post-operative pathology result revealed: In both ovary, tumor tissue composed of ectoderm, mesoderm, and endoderm components with tumor cells nucleated round/oval, vesicular, relatively uniform, fine-grained chromatin resembling “salt and pepper, partially solid.” Immunohistochemistry result training pattern was consistent with carcinoid tumors.

Results: In conclusion, histological according to mature ovarian teratoma with carcinoid.

Conclusion: Malignant transformation of benign ovarian tumors, including mature teratoma, is very rare. In addition, the clinical findings and pre-operative examinations did not help a lot to establish the diagnosis. Often the diagnosis was discovered unexpectedly in post-operative specimens such as happened in this case.

Poster (O40)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O40>

Single-arm, phase II study of niraparib and bevacizumab maintenance in platinum-sensitive, recurrent ovarian cancer previously treated with a PARP-inhibitor: KGOG3056/ NIRVANA-R

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Background: Given the expanding clinical use of poly(ADP-ribose) polymerase inhibitors (PARPi), there is a significant need for optimal strategies with which to treat patients whose cancer progresses while using a PARPi. However, the treatment consensus after PARPi has not been established. PARPi and anti-angiogenic agent combination therapy is a promising option to treat relapsed patients exposed to a PARPi. The synergistic efficacy of dual maintenance therapy

(anti-angiogenic agent plus PARPi) in epithelial ovarian cancer (EOC) patients was approved in many previous studies, but there were few data in patients after PARPi progression. The aim of the Korean Gynecologic Oncology Group (KGOG) 3056/NIRVANA-R trial is to investigate the efficacy of niraparib in combination with bevacizumab as a maintenance therapy in platinum-sensitive ovarian cancer patients who were previously treated with a PARPi.

Methods: The KGOG3056/NIRVANA-R is a multi-centre, investigator-initiated, single-arm, phase II trial recruiting recurrent EOC patients from seven KGOG sites. This study included patients with platinum-sensitive recurrent EOC who received at least two previous courses of platinum-containing therapy and had been treated with a PARPi. Mucinous histology type was excluded. Patients who had responded to the last platinum regimen (either complete or partial response) were eligible to participate in this study. Forty-four patients will be recruited and treated with niraparib and bevacizumab for maintenance therapy until disease progression, unacceptable toxicity, or withdrawal of patient consent. The primary endpoint is progression-free survival (PFS, 6-month PFS rate) according to the Response Evaluation Criteria in Solid Tumors guidelines. Accrual is expected to be completed in 2022, followed by presentation of results in 2023.

Poster (O41)

Epithelial Ovarian Cancer including Borderline Tumor

<https://doi.org/10.3802/jgo.2021.32.S1.O41>

Trial in progress: a phase II trial of lenvatinib plus pembrolizumab in recurrent gynecological clear cell adenocarcinomas (LARA) - APGOT OV3

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Background: Advanced and recurrent clear cell gynecologic cancers (CCGCs) remain an area of significant unmet need. CCGCs are associated with lower response rates to platinum-based chemotherapy compared to high-grade serous ovarian cancers, and worse 5-year stage-adjusted disease-specific survival. CCGCs are more prevalent in East Asia, constituting up to 25% of all epithelial ovarian cancers. CCGCs bear remarkably

similar gene expression profiles to clear cell renal cell cancers—they have an immune-suppressive microenvironment, prominent upregulation of HIF-1 α and a hypoxia-like mRNA expression signature. This provides rationale for the use of lenvatinib plus pembrolizumab in CCGCs.

Methods: This is a phase II, international, multi-center, single-arm trial of continuous daily oral lenvatinib 20 mg plus intravenous pembrolizumab 200 mg 3-weekly. Patients with recurrent CCGC of either ovarian or endometrial origin after progression on at least one line of platinum-based chemotherapy, who have measurable disease and no prior immune checkpoint blockade are eligible. The primary endpoint of the trial is the objective response rate (ORR) by RECIST v1.1 criteria at 24 weeks. Secondary endpoints include ORR by iRECIST at 24 weeks, biochemical response rate, progression-free survival rate at 24 weeks, clinical benefit rate at 24 weeks, duration of response, overall survival and adverse event profile. Translational multi-parametric immune analysis on archival tissue, pre-, on-treatment and post-progression tumor biopsies as well as blood samples will seek to explore prognostic and predictive biomarkers of response and resistance to this combination. Sample size calculations were based on the Simon 2-stage minimax design. Based on ORR up to 10% (H0) in recurrent CCGC treated with chemotherapy and an alternate hypothesis of ORR up to 30%, at a 5% significance level (one-sided alpha) and 80% power of rejecting H0, 15 patients will be recruited to the first stage. If 2 or more patients demonstrate objective response, the study may proceed to full recruitment of 25 patients. LARA is currently open for accrual at three sites in Singapore and South Korea, and has 6 patients enrolled at the time of submission (NCT04699071, APGOT OV3).

Trial Registration: ClinicalTrials.gov Identifier: [NCT04699071](https://clinicaltrials.gov/ct2/show/study/NCT04699071)

Poster (O42)

Surgical Techniques & perioperative Management

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Morbidity and mortality outcomes after cytoreductive surgery with hyperthermic intraperitoneal chemotherapy in a treatment of gynecologic malignancies

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Objective: It has been reported that hyperthermic intraperitoneal chemotherapy (HIPEC) with cytoreductive