Abstracts

**PR059/#861 FROM PHENOTYPE TO GENOTYPE: PEROPERATIVE PREDICTION OF HRD STATUS IN EPITHELIAL OVARIAN CANCERS (EOC) BASED ON SERUM CA-125, INTRAOPERATIVE TUMOUR CHARACTERISTICS AND SURGICAL RESECTABILITY**

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Introduction Our previous work showed that EOC patients who are homologous-recombination competent (HRC) have distinct per-operative characteristics including lower CA125 at presentation, infiltrative fibrotic tumour and lower optimal surgical cytoreduction rates (Mukhopadhyay et al, Cancer Res 2012). We hypothesized that HRC/BRCA-wild-type can be predicted based on tumour characteristics attributed to atypical tumour-stromal interaction leading to non-secretory phenotype and higher desmoplasia resulting in poorer surgical outcomes.

Methods A prospective study of stage III/IV high grade serous EOC patients operated over 2 years (01/2021–12/2022) were analysed to score phenotypical HRC/BRCA(pHRC) status based on CA-125 levels, pattern of tumour spread and completeness of surgical cytoreduction (table 1). Pathological genomic HR status(gHR) was determined from tumour tissue by Myriad MyChoice CDx Test assay. Reverse validation of pHRC score was performed against confirmed gHR status to assess predictability.

Results Of 40 patients enrolled, thirty were included for analysis. Reason for exclusion included insufficient tissue for HR profiling (n=4), inadequate assessment during surgery (n=4), unconfirmed primary site (n=2). Pattern of tumour spread was indeterminate in 12 patients and infiltrative in 13 patients. Pathologic HR analysis confirmed 19 patients were gHR (genomic HRC). A pHRC score of ≥3 predicted gHR with sensitivity of 73.6%, positive predictive value of 93.3% and specificity of 90.9%. All patients who scored 0 were proven to be HR deficient. Greatest discrepancy was noted in those with score of 2.

Conclusion/Implications Intraoperative tumour phenotype allows for accurate prediction of HRC status. Phenotypic HRC status can be useful surrogate for genomic HRD assay with wider implication where HRD testing is unavailable.

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**PR060/#838 IMPACT OF ASCITES AND PERITONEAL METASTATIC LESION VOLUMES, MEASURED BY NEWLY DEVELOPED DEEP LEARNING-BASED ALGORITHM, IN ADVANCED EPITHELIAL OVARIAN CANCER**

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Introduction We investigated the impact of ascites and peritoneal metastatic (PM) lesion volumes, measured by deep learning-based algorithm, on survival outcomes in advanced epithelial ovarian cancer.

Methods Applying our newly developed deep learning-based auto-segmentation algorithm to pre-treatment computed tomography (CT) images obtained from 195 patients with advanced-stage EOC, we measured volumes of ascites and PM lesions in the abdominal-pelvic cavity. Using the median values of ascites and PM lesion volumes as cut-off values, patients were divided into high- and low-volumetric ascites groups and high- and low-volumetric PM groups. Thereafter, survival outcomes were compared between the two groups.

Results Of the study population, 34.9% had FIGO stage IV disease and 78.5% had high-grade serous carcinoma. Complete cytoreduction was achieved in 56.4%. The median volumes of ascites and PM lesions were 714.5 cm³ and 341.1 cm³, respectively. The high-volumetric ascites group showed significantly worse OS than the low-volumetric ascites group (5-year PFS rate, 68.7% vs. 46.1%, P=0.001), but similar PFS. In multivariate analyses adjusting for clinicopathologic factors, high-volumetric ascites was identified as an independent poor prognostic factor for OS (aHR, 1.801; 95% CI, 1.147–2.828; P=0.011). Limited to a subgroup of patients who achieved complete cytoreduction (n=110), high-volumetric PM was associated with significantly worse OS (aHR, 2.231; 95% CI, 1.066–4.669; P=0.033).

Conclusion/Implications We successfully measured volume of ascites and PM lesions in the abdominal-pelvic cavity using the newly developed deep learning-based auto-segmentation algorithm. Our study results indicate that volumetric measurement of ascites and PM lesions might be novel prognostic factors for survival outcomes in patients with advanced-stage epithelial ovarian cancer.