THE NEOANTIGENS LANDSCAPE ASSOCIATED WITH HISTOLOGICAL SUBTYPES IN EPITHELIAL OVARIAN CANCER

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Introduction Neoantigens play a critical role in cancer immunotherapy. Epithelial ovarian cancer (EOC) is a strong heterogeneity tumor, often an immune desert, but immunotherapy is extremely important for intent to cure of cancer. We investigated neoantigen landscape of EOC, tried to select patients who are appropriate to immunotherapy.

Methods 97 patients with EOC from May 2015 to April 2023 were included. Neoantigens were predicted by whole-exome sequencing (WES) and RNA-seq. Mutated peptides with a binding affinity of IC50<500 nM were regarded as candidate neoantigens. Patient’s clinical information were collected and statistical calculations were performed.

Results Of the 97 patients (74 High-grade serous carcinoma (HGSC), 11 Endometrioid carcinoma (EC), 4 Mucinous tumor (MC), 7 Clear cell carcinoma (CCC), and 1 poorly differentiated carcinoma), the detection rate of neoantigens was 85.6%. The number of neoantigens in HGSC, EC, MC, and CCC was 0–223 (30.5), 12–152 (41), 8–242 (39) and 13–80 (46.5), respectively (range, SD). CCC, EC and MC had more neoantigens than HGSC, although the difference was not significant. Among predicted neoantigens, the TP53 gene accounted for the largest proportion at 33%, followed by ARID1A, PIK3CA, PLXNA3 and PPP2R1A genes.

Conclusion/Implications In this study, CCC, EC and MC carried more neoantigens, suggesting that they may benefit more from immunotherapy, however, we should expand the sample size to explore whether the difference is significant. Based on this study findings, future clinical trials of immunotherapy for EOC should consider enrolling more patients with CCC, EC, and MC subtypes, instead of focusing mostly on HGSC patients as in previous trials.