Molecular Profiling of Mucinous Epithelial Ovarian Carcinomas (mEOC)

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Abstract

Background

- mEOCs show a unique spectrum of heterogeneous genetic alterations compared to other epithelial ovarian cancers.
- Previous studies have reported that mEOCs exhibit a high frequency of PI3K/AKT pathway activation.
- The presence of actionable mutations in mEOCs suggests potential therapeutic targets.

 Methods

- Tumor samples were collected from 379 mEOC patients.
- DNA was extracted from formalin-fixed paraffin-embedded tissues.
- Comprehensive molecular profiling was performed using a combination of next-generation sequencing (NGS), immunohistochemistry (IHC), and fluorescence in situ hybridization (FISH).
- The results were analyzed to identify potential therapeutic targets and biomarkers.

 Results - Molecular Characterization of Mucinous Epithelial Ovarian Carcinomas (mEOC) (n=304)

- KRAS (23% (71/304)) and PI3K/PI4K (34% (103/304)) were the most frequent alterations.
- Other frequent alterations included PTEN (9% (27/304)), PDGFRα (11.8% (36/304)), and CDK4 (12% (36/304)).
- The most common alteration was ERBB2, seen in 10% (30/304) of patients.

 Results - Comparison of P53 mutated (n=37) and P53 wildtype (n=68) Mucinous Ovarian Cancer

- P53 mutations were found in 23% (8/35) of patients, compared to 15% (5/33) of patients with wildtype tumors.
- Mutations were more common in tumors with P53 mutations (p=0.021).

 Results – Potential treatment strategies

- Potential therapeutic targets include PI3K/AKT, MAPK, and PTEN pathways.
- PD-1/PD-L1 checkpoint inhibitors and targeted therapies against specific alterations may be considered.

 Conclusions

- Comprehensive molecular profiling of mEOCs is essential for identifying potential therapeutic targets.
- The use of targeted therapies against specific alterations in mEOCs may improve treatment outcomes.

References

- Tubular-type mucinous colorectal cancer (mCRC) has heterogeneous genetic alterations. Genes 2018;9:69.
- The role of DNA repair pathways in tumor progression and therapy resistance. Trends Genet 2018;34:529.