Comprehensive genetic profiling and ovarian cancer

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Ovarian cancer

Ovarian cancer remains a significant health challenge in the UK, claiming the lives of approximately 4,100 women each year, that is around 11 every single day, based on data from 2017 to 2019. It stands as the sixth most common cause of cancer-related deaths among females in the UK, responsible for 5% of all female cancer deaths during that period.[1]

Comprehensive genomic profiling

Comprehensive genomic profiling (CGP) is a type of test that analyses the genetic profile of a patient's tumour across hundreds of genes. Advances in CGP, combined with a deeper understanding of the clinical relevance of targetable genetic mutations, have paved the way for personalised treatment strategies in ovarian cancer.

Research study

This retrospective study evaluated whether CGP provides prognostic or predictive benefits for ovarian cancer patients and its ability to detect specific biomarkers linked to response to targeted therapies, overall disease prognosis, or distinct clinical trajectories associated with genetic mutations.[2]

Method

N=946

Aim: to evaluate whether CGP offers a prognostic advantage in this patient population.

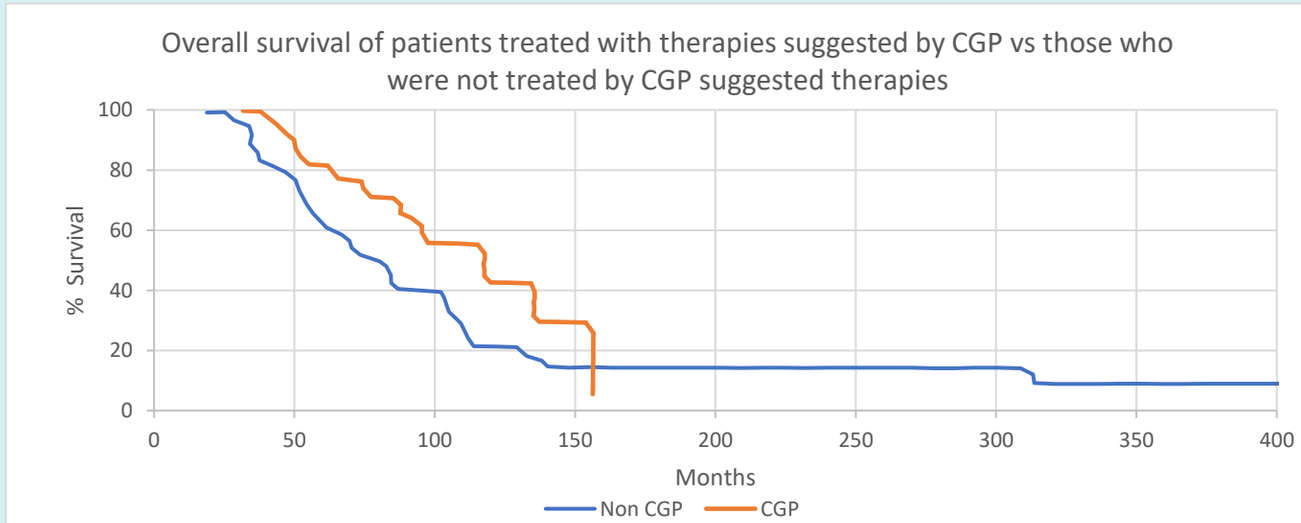
- 11.4% underwent CGP
- 88.6% as the control group

Results

Cox regression analysis comparing those without a biomarker identified mutation vs. those with, and adjusted for age, stage at diagnosis, and recurrence status showed:

- **Statistically significant** improvement in median overall survival (OS) (**73.4 months vs. 54.5 months, *p* < 0.001)**

Kaplan–Meier curves:
OS = **105.5 months** (95% CI 74.4-not reached) vs. **63.6 months** (95% CI 48.2–90.9).
Log-rank ***p* value 0.066**



CGP remains underutilised in ovarian cancer due to cost, limited targeted therapies, and scarce retrospective data. This study found that CGP was associated with improved overall survival and identified biomarkers such as BRCA mutations and high loss of heterozygosity (loss of heterozygosity is a genetic change often seen in cancer, where cells lose the healthy variation between gene copies, ending up with identical ones. This can lead to faulty cell behaviour and contribute to cancer development) linked to better responses to PARP inhibitors. These findings highlight CGP's value in guiding personalised treatment strategies.

1 https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/ovarian-cancer
2 Peleg Hasson S, Hershkovitz D, Adar L, Brezis M, Shachar E, Aks R, Galmor L, Raviv Y, Ben Neriah S, Merimsky O, Sabo E, Wolf I, Safra T. Implementation of Comprehensive Genomic Profiling in Ovarian Cancer Patients: A Retrospective Analysis. Cancers (Basel). 2022 Dec 29;15(1):218. doi: 10.3390/cancers15010218. PMID: 36612212; PMCID: PMC9818378.