**Toxicity and therapy outcome associations in candidate variants in high-grade serous ovarian cancer.**

**Abstract**

To identify genetic associations in ovarian cancer chemotherapy-induced toxicities and therapy outcomes, we examined a cohort of 101 patients receiving carboplatin-paclitaxel treatment with advanced high-grade serous ovarian cancers. We selected 19 candidate polymorphisms, designed a multiplex single nucleotide polymorphism-genotyping assay for the association analyses. We found multiple significant associations. Our results suggest that SLCO1B3 and LIG3 variants are associated with the risk of adverse effects in patients receiving carboplatin-paclitaxel treatment, the GSTP1 variant may affect the treatment response and ABCB1 and OPRM1 variants may influence the prognosis. The SLCO1B3 rs1052536 AA-genotype was associated with a reduced risk of any severe toxicity (Cox-regression test, hazard ratio = 0.35, p = 0.023). LIG3 rs1052536 T-allele was associated with an increased risk of neuropathy (odds ratio [OR] = 2.79, p = 0.031) and GSTP1 rs1695 G allele with a poorer response in the first-line chemotherapy (OR = 2.65, p = 0.026) (Chi-square allelic test). In Kaplan–Meier survival analysis, ABCB1 rs2032582 TT-genotype was associated with shorter overall survival (uncorrected p = 0.025) and OPRM1 rs544093 GG and GT genotypes with shorter platinum-free interval (uncorrected p = 0.027) and progression-free survival (uncorrected p = 0.012).