SUMMARY

Ovarian cancer is a leading cause of death from gynecologic malignancies. Most ovarian carcinomas are diagnosed in an advanced stage. Surgical treatment promotes a high response rate combined with chemotherapy. However, two-thirds of patients experience a relapse, followed by a development of chemoresistance, and, subsequently, death. The biological diversity of individual types of ovarian carcinoma is so varied, that a single treatment regimen can not be considered as a fitting treatment for all patients. Various studies focus on the individualisation of cancer treatment. This study targets the *in vitro* sensitivity testing in ovarian carcinoma cells on cytostatics using the MTT test. We presume that this method could be utilised in clinical decision-making process.

Between the years 2006 and 2010, we have acquired tumor tissue and malignant ascites from a total of 55 patients enrolled in our study and analyzed those samples *in vitro* for chemosensitivity / chemoresistance using the MTT test. The aim of this research work was to asses chemosensitivity of ovarian carcinoma cells and compare these results with clinical parameters.

Carcinoma cells displayed *in vitro* chemosensitivity to cisplatin in 67% of patients. Tumor cells of 22% patients proved to be sensitive to carboplatin and 16% to paclitaxel. *In vitro* chemosensitivity to cisplatin prolonged both the period without progression and, overall, the longest survival. Results of multivariate analysis suggested that patients whose carcinoma cells were *in vitro* sensitive to carboplatin and who had no residual tumor or just microscopic residual tumor showed the longest period without progression and longest survival. When comparing fresh tumor samples and ascites, we found correlation only in chemosensitivity to cisplatin. However, there was no concordance in sensitivity between fresh and frozen tissue samples.

In vitro chemosensitivity testing should be incorporated in examination methods for ovarian cancer patients before any cytostatic therapy administration. This method would contribute to personalized therapy by enhancing the probability of successful treatment while decreasing side effects.