

SUMMARY

Ovarian cancer is one of the leading causes of mortality among gynecological cancers worldwide. **Due to the lack of symptoms in the early stages of the disease, it is usually diagnosed at an advanced stage. Solutions are sought in selecting the ideal laboratory biomarker, imaging methods, or their combination to improve diagnostic capabilities, with the primary goal being earlier detection of the disease and thus increasing the survival rate of women.**

Study Objectives: The aim of the study was to analyze the significance of ultrasound parameters: vascularization index (VI), flow index (FI), vascularization and flow index, tumor volume, and biochemical markers: CA125, HE4, Survivin, and Mesothelin, as well as factors such as age, height, body weight, BMI, RMI, *Simple Rules* IOTA in the diagnosis of ovarian tumors and to assess their significance for the probability of tumor malignancy.

Methods: The study included a group of 68 patients treated and subsequently operated on at the Clinic of Obstetrics, Women's Diseases, and Gynecological Oncology of Dr. Jan Bizieli University Hospital No. 2 in Bydgoszcz. For each patient, the values of biochemical markers: CA125, HE4, Mesothelin, and Survivin were assessed, and transvaginal ultrasound with a volumetric probe was performed to evaluate tumor volume, vascularization index (VI), flow index (FI), vascularization and flow index (VFI), *Simple Rules* IOTA, and the RMI value was calculated. All patients underwent surgery. The obtained material was analyzed histopathologically.

Results: The study showed differences in CA125 and HE4 levels, as well as in the vascularization index and vascularization and flow index between patients with malignant and benign tumors. Certain correlations between the evaluated biochemical markers and age, height, body weight, BMI, and RMI were also identified in the studied group of patients.

Conclusions: Based on the values of biochemical markers CA125 and HE4, as well as the values of the vascularization index (VI) and vascularization and flow index (VFI), the malignancy of an ovarian tumor can be predicted. The study also confirmed the possibility of predicting tumor malignancy based on the RMI index and *Simple Rules* IOTA.