

EXTERNAL VALIDATION OF SELECTED PREDICTIVE MODELS IN DIFFERENTIAL DIAGNOSIS OF ADNEXAL MASSES DIFFICULT TO CLASSIFY AS BENIGN OR MALIGNANT

R. Moszynski, S. Szubert, P. Zywica, A. Wojtowicz, S. Sajdak, A. Stachowiak, K. Dyczkowski, M. Wygralak, D. Szpurek

Objectives:

The aim of this study was to validate the diagnostic performance of selected predictive models (IOTA logistic regression models (LR1 and LR2), Timmerman logistic regression model, Alcazar model, risk of malignancy index - RMI, risk of malignancy algorithm - ROMA, sonomorphologic index (SM), vascularization index (SD), and the subjective ultrasonographic assessment performed by experienced ultrasonographer in the group of patients with ovarian tumors classified as category 4 or 5 according to GI-RADS system. These categories include tumors that cannot be accurately diagnosed using pattern recognition. The strategy for GI-RADS 4 means: probably malignant - this category included adnexal lesions that could not be included in the groups of benign lesions, and the GI-RADS 5 - which are very probably malignant.

Material and Method

The study included 268 patients with adnexal mass. Among them, there were 185 patients classified as GI-RADS 4 or 5 (106 and 79 respectively). This group consisted 89 benign ovarian tumor and 96 patients with malignant ovarian tumor. Each tumor was evaluated in transvaginal ultrasonography according to diagnostic criteria of analyzed models.

Results

Prognostic values are as follow: SENSITIVITY, SPECIFICITY, ACCURACY, AUC, respectively for models:

LR1: 0.98, 0.45, 0.72, 0.874

LR2: 0.97, 0.45, 0.72, 0.828

TIMMERMAN: 0.82, 0.83, 0.83, 0.896

SM: 0.94, 0.55, 0.75, 0.848

SD: 0.92, 0.55, 0.73, 0.852

ALCAZAR: 0.88, 0.72, 0.80, 0.883

RMI: 0.80, 0.77, 0.79, 0.875

ROMA: 0.83, 0.86, 0.85, 0.906

SUBJECTIVE ASSESSMENT: 0.89, 0.84, 0.87, 0.899

The analyzed predictive models achieved similar diagnostic performance in the whole studied population. The differences were not statistically significant. The highest sensitivity was observed for LR1 model, the highest specificity was noted for ROMA, while the highest accuracy was observed for subjective ultrasound assessment. The ROMA algorithm achieved the highest area under ROC curve.

The use of diagnostic models of ovarian tumors is a reasonable diagnostic procedure for predicting their malignancy in difficult cases.