Clinical utility of the risk of malignancy indices for preoperative differentiation between ovarian cancer and borderline ovarian tumor

So Ra Oh, Myoungseok Han, Jong Woon Bae, Yeon Jean Cho, Jung-Woo Park,
Department of Obstetrics and Gynecology, Dong-A University Medical Center,
Busan, Republic of Korea

INTRODUCTION

The risk of malignancy index (RMI) effectively identifies women with a high risk of ovarian malignancy, facilitating referral to a gynecologic oncology center and adequate staging by expert oncologic surgeons. This study aimed to determine an appropriate RMI cutoff value by comparative analysis of the four malignancy risk indices (RMI 1, RMI 2, RMI 3, and RMI 4) for distinguishing between ovarian cancer (OC) and borderline ovarian tumor (BOT).

MATERIAL AND METHODS

We retrospectively enrolled 339 patients: 115 women with BOTs and 224 with OCs, who were admitted between January 7, 2000 and September 30, 2016 for scheduled laparoscopy or laparotomy. Preoperative serum CA125 level, menopausal status, tumor sizes, and ultrasound findings were used to calculate the RMI 1, RMI 2, RMI 3, and RMI 4 scores for each patient, and the results were compared.

RESULTS

The study findings regarding age, menopausal status, tumor markers, tumor size, and ultrasound score are shown in Table 1. There were no significant differences in the area under the curve (AUC) among the four malignancy risk indices (AUC of RMI 1, RMI 2, RMI 3, and RMI 4 was 0.792, 0.791, 0.785, and 0.785, respectively).

However, there was a statistically significant difference in the diagnostic performance of RMI compared to other factors (serum CA125, menopause score, tumor size, and ultrasound score). The diagnostic performance of these factors with the RMI is shown in ROC curves (Figure 1).

Figure 1. ROC curve for Comparisons

CONCLUSION

RMI is a considerably useful diagnostic tool for the differential diagnosis of BOT from invasive OC. This study is the first to investigate the performances of the four malignancy indices in invasive OCs and BOTs. The results could contribute greatly to adequate staging by gynecologic oncologists, which is of major prognostic importance in patients with suspected ovarian malignancies.

Table 1. The distribution of BOT and OC cases by age, menopausal status, ultrasound score, tumor size, and serum CA 125

Variables	BOT n=115 (33.9%)	OC n=224 (66.1%)	Significance level	
			Test	P
Age (years)	41.37 ± 17.64	52.22 ± 14.64	χ^2	< 0.001
Menopausal status				
Premenopausal	81(70.4%)	93 (41.5%)	χ^2	< 0.001
Postmenopausal	34(29.6%)	131 (58.5%)		
Ultrasound score			χ^2	< 0.001
0	7 (6.1%)	0 (0%)		
1	41 (35.7%)	49 (21.9%)		
2	51 (44.3%)	96 (42.9%)		
3	11 (9.6%)	54 (24.1%)		
4	5 (4.3%)	23 (10.3%)		
5	0 (0%)	2 (0.9%)		
Tumor size	16.5 ± 8.7	11.5 ± 6.0	χ^2	< 0.001
CA 125 (IU/ml)	95.4 ± 185.1	659.98 ± 831.7	U-test	< 0.001