

Introduction

The diagnosis of ovarian cancer is often established at an advanced stage of disease progression, due to the absence of a universal screening method. The Risk of Malignancy Index 1 (RMI1) is a scoring system used to predict the likelihood of malignancy in suspected ovarian masses. The objective of our study was to evaluate the performance of the RMI1 score in assessing the risk of malignancy in suspected ovarian masses managed in our department.

Methods

This was a descriptive, longitudinal, retrospective, and monocentric study conducted in the Gynecology and Obstetrics Department of the Maternity Center of Tunis. The study spanned a period of three years, from January 2019 to December 2021, and included women who underwent surgery for suspected ovarian masses meeting the criteria for suspicion. A total of 88 patients were included in the study. Women lost to follow-up were excluded.

Results

The mean age of the patients was 45.6 years. Chronic abdominopelvic pain was the most common presenting symptom (n = 39), accounting for 44.3% of cases. An RMI1 score ≥200, suggestive of malignancy, was observed in 70.5% of cases. Suspected ovarian masses were malignant in 60.2% of cases. Among these, 88.7% were primary malignant tumors, while 11.3% were secondary. The median RMI1 score was 405 (IQR = [118.5–2034]).

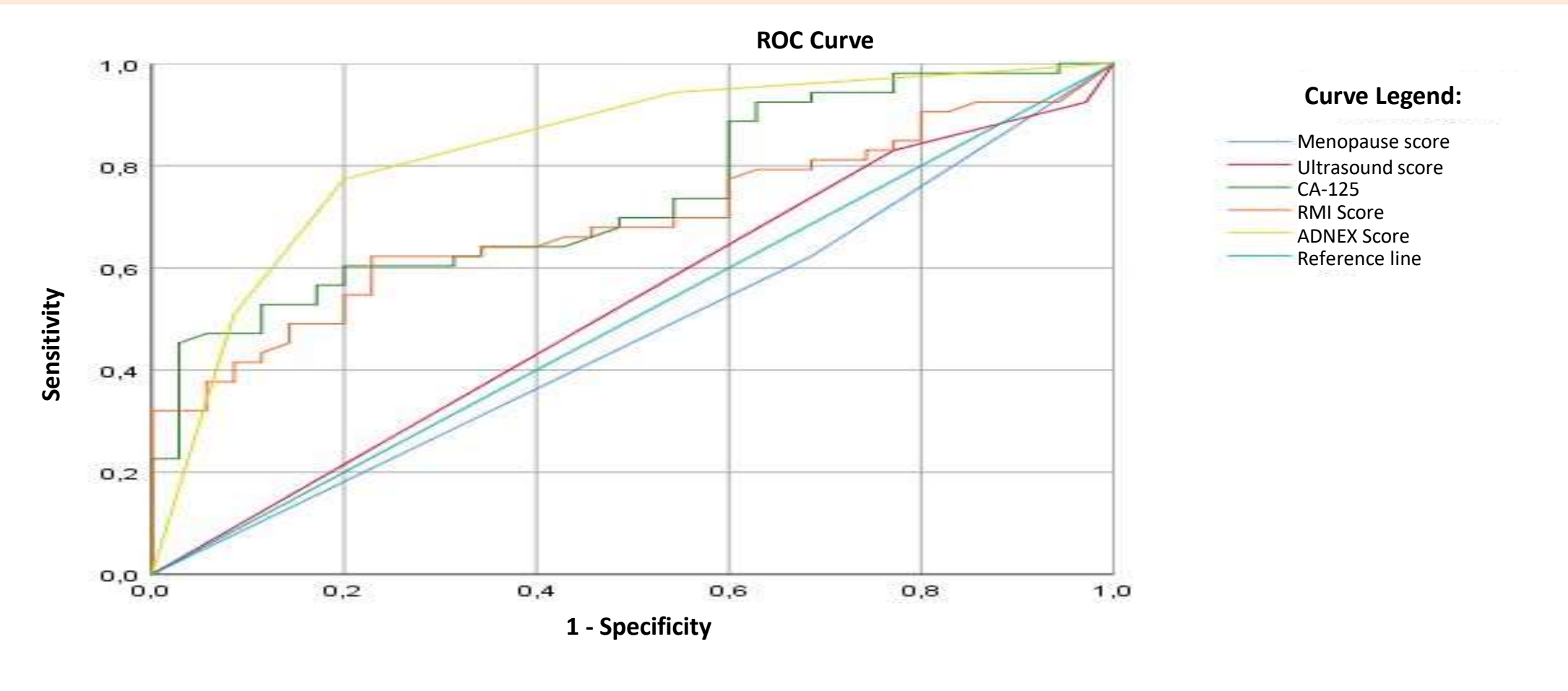


Figure 1: Summary of the Performance of Malignancy Diagnostic Tools (ROC Curve)

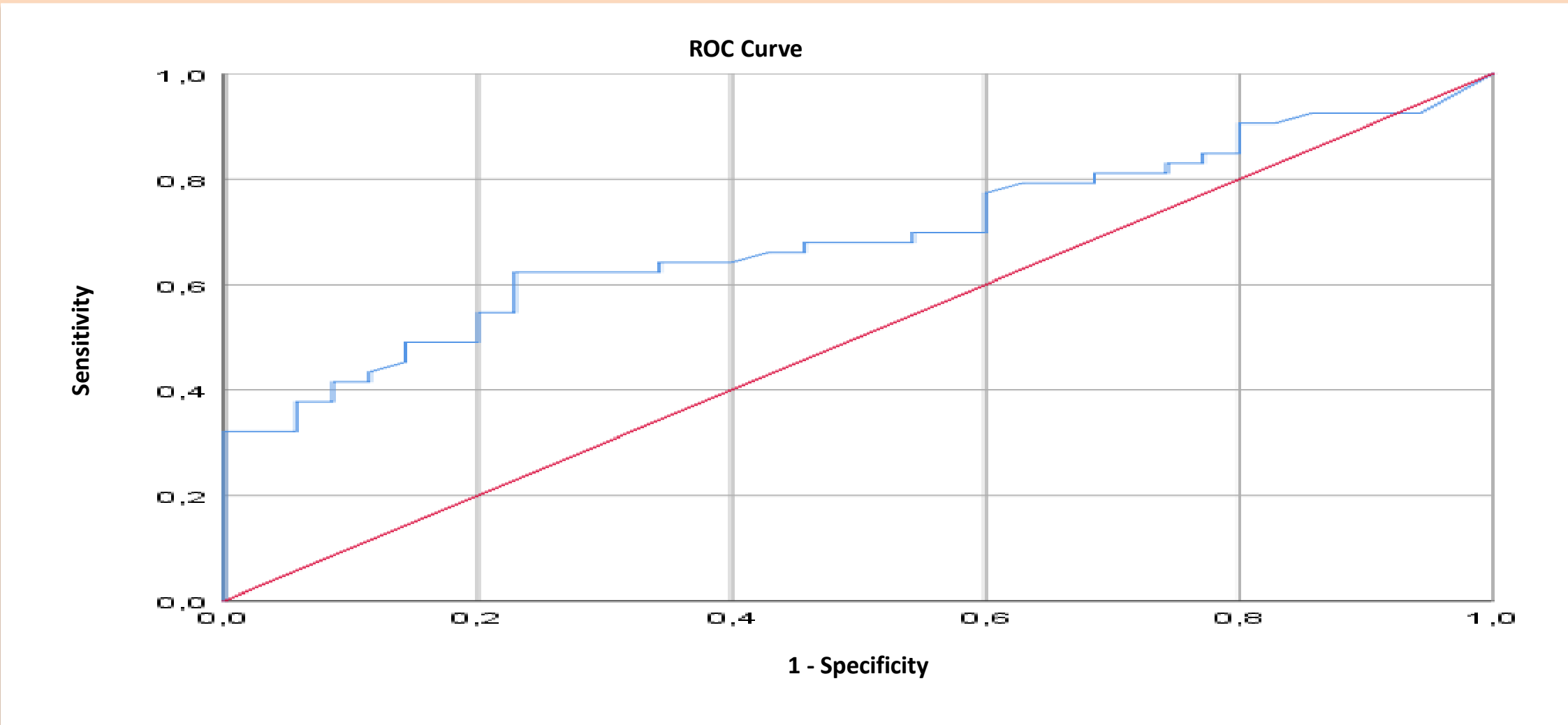


Figure 2: Performance of the RMI 1 Score in Malignancy Diagnosis (AUC = 68.9%)

The RMI1 score was significantly higher in cases of malignant tumors (p = 0.003), with an area under the ROC curve of 68.9%.

	RMI 1 ≥ 200	RMI 1< 200
Malignant epithelial tumor	27 (90%)	3 (10%)
Sex cord-stromal tumor	1 (33,3%)	2 (66,7%)
Germ cell tumor	1 (50%)	1 (50%)
Borderline tumor	7 (58,3%)	5 (41,7%)
Secondary (metastatic) tumor	5 (83,3%)	1 (16,7%)

Table 1: Distribution of Malignant Tumor Types According to the RMI1 Score Threshold

Ninety percent of epithelial malignant tumors (n = 27) had an RMI1 score >200. However, 41.7% of borderline tumors had an RMI1 score <200, representing approximately half of such cases.

Parameter	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Youden Index
Menopausal Score = 3	62.3	31.4	64.5	42.1	–
Ultrasound Score ≥ 3	83	22.9	62	47.1	–
CA-125 ≥ 35 IU/mL	84.3	25.7	65.3	50.2	0.10
CA-125 ≥ 78.5 IU/mL	73.6	40	67.2	53.3	0.13
RMI1 Score ≥ 196	77.4	40	66.1	53.8	0.17
RMI1 Score ≥ 200	75.4	40	64.4	52.4	0.15
ADNEX MR Score ≥ 4	77.4	80	85.4	70	–

Table 2: Performance of Diagnostic Tools for Malignancy

	Median	[IQR]
Malignant epithelial tumor	2610	[525-3600]
Sex cord-stromal tumor	89.71	[59.855-449.855]
Germ cell tumor	865	[60-1670]
Borderline tumor	259.5	[117-556.5]
Secondary tumor	1087.5	[200-8100]

Table 3 : Median and Interquartile Range of Tumor Types

Discussion

The RMI1 score demonstrated moderate diagnostic accuracy in our cohort, with a sensitivity of 77% and specificity of 58%, slightly lower than values reported in the literature. Its predictive performance was significantly associated with menopausal status, solid components, bilaterality, and papillary projections on imaging. Although CA-125 levels were frequently elevated in malignant cases, their specificity remained limited. The RMI1 score was particularly effective in detecting epithelial tumors, but less reliable for borderline tumors. MRI proved more specific than ultrasound in detecting peritoneal implants. These findings highlight the utility of RMI1 as a practical triage tool in resource-limited settings, but also underscore the importance of complementary imaging and clinical judgment.

Conclusion

The diagnostic utility of the RMI1 score in our study was lower compared to literature data. A prospective multicentric study is needed to better evaluate the applicability of the RMI1 score in the Tunisian population

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