

ASSESSMENT OF MULTIPLE SERUM MARKERS IN DIFFERENTIATING BENIGN AND MALIGNANT OVARIAN TUMOURS

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INTRODUCTION

- Immune response, which integrates both inflammatory and coagulation processes, plays a critical role in the development and progression of ovarian cancer
- The present study is directed toward the estimation of the serum levels of Cancer antigen-125, D-dimer, and Neutrophil : Lymphocyte ratios (NLR), all of which depict immune response, and evaluates their roles as inflammatory biomarkers in an attempt to distinguish between Benign and malignant ovarian tumours preoperatively.

OBJECTIVES

The purpose of this study was to determine the serum levels of CA-125, D-dimer, and the neutrophil-to-lymphocyte ratio in order to develop a non-invasive panel of tests using their combined diagnostic accuracy in distinguishing benign and malignant ovarian tumors prior to surgery.

METHODS

- In the study, 61 women who presented to the All India Institute of Medical Sciences Rishikesh, Uttarakhand, India, with abdominal-pelvic masses participated.
- These women were suspected of having benign or malignant ovarian tumors, and surgery was planned for definitive management.
- Each woman's verbal and written informed consent was obtained.
- Prior to surgery, 10 ml of venous blood was drawn from each patient to evaluate serum levels of CA-125, D-dimer, and the neutrophil to lymphocyte ratio (NLR).
- All the women underwent surgery, and surgically extracted specimens were examined histopathologically.
- For each case, clinical data, serum levels of tumor markers, imaging findings, and surgical details were gathered.
- The correlation between the serum levels of CA-125, D-Dimer, and NLR and the final histopathological diagnosis for each case was determined through statistical analysis.
- The Wilcoxon- Mann-Whitney U test was used to associate non-normally distributed quantitative variables, while the independent t test was used for normally distributed variables.
- Using the Chi-Square test and Fisher’s exact test, qualitative variables were linked.
- Using the Receiver operating characteristic (ROC) curve, the cut-off points for D dimer, CA-125, and NLR for predicting ovarian cancer were determined.

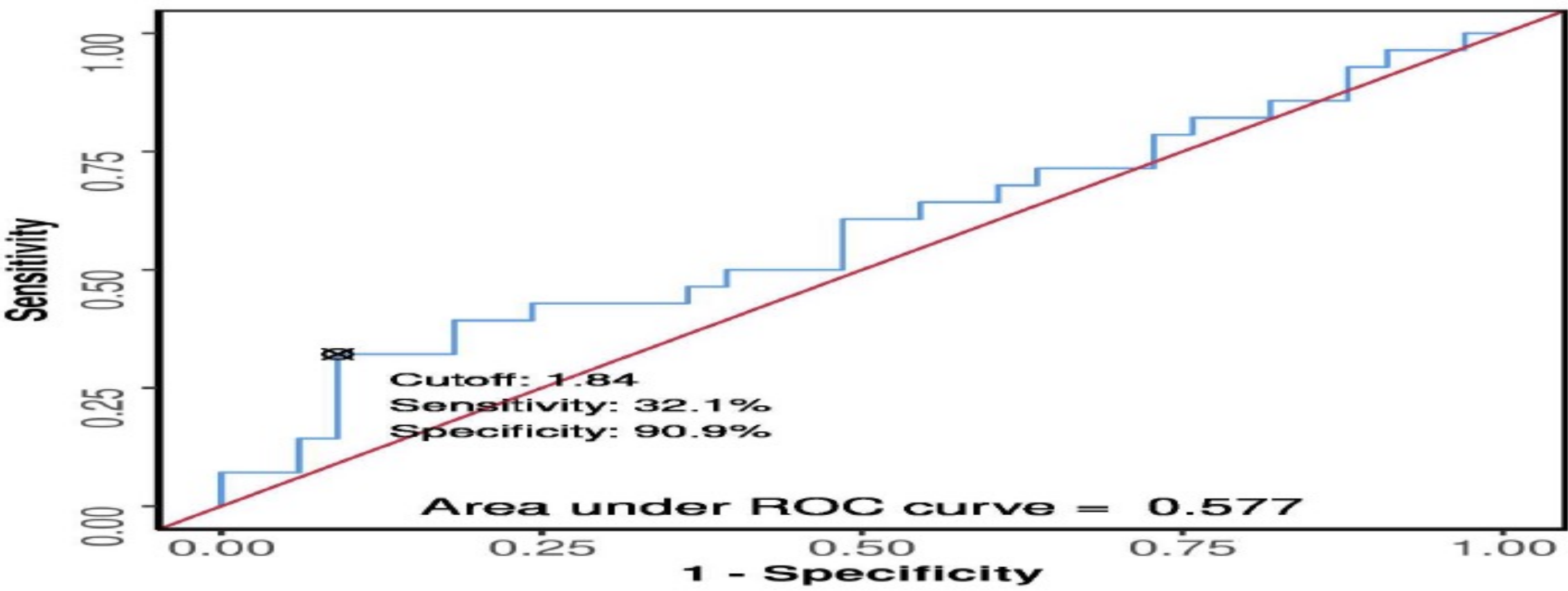


FIGURE 1- (AUROC) for the NLR in predicting malignancy

RESULT AND CONCLUSION

- The area under the ROC curve (AUROC) for the NLR in predicting malignancy was 0.577, with 95% confidence intervals (CI) (0.429–0.725). (Figure 1)
- A Neutrophil to Lymphocyte ratio of 1.841 correctly predicted malignancy with 91% specificity.
- The combined area under the ROC curve (AUROC) for CA 125 (U/mL) + D-Dimer (mg/dL) + the neutrophil-lymphocyte ratio was 0.614, with a 95% confidence interval (CI) (0.466 to 0.761). (Figure 2)
- **At a combined cut-off of 0.456, the multi-marker combination predicted ovarian malignancy with 39% sensitivity, 91% specificity, and 79% positive predictive value.**
- Serum levels of CA-125, NLR, and D-Dimer cannot be considered diagnostically accurate pre- operative tests for predicting ovarian malignancy.

- To the best of Author’s knowledge, very few similar studies are available in literature pertaining to the Indian population.
- The study focused on a simple, cost-effective way to diagnose or distinguish Benign and malignant Ovarian tumours preoperatively and even achieved to derive a Multimarker assay of High specificity.

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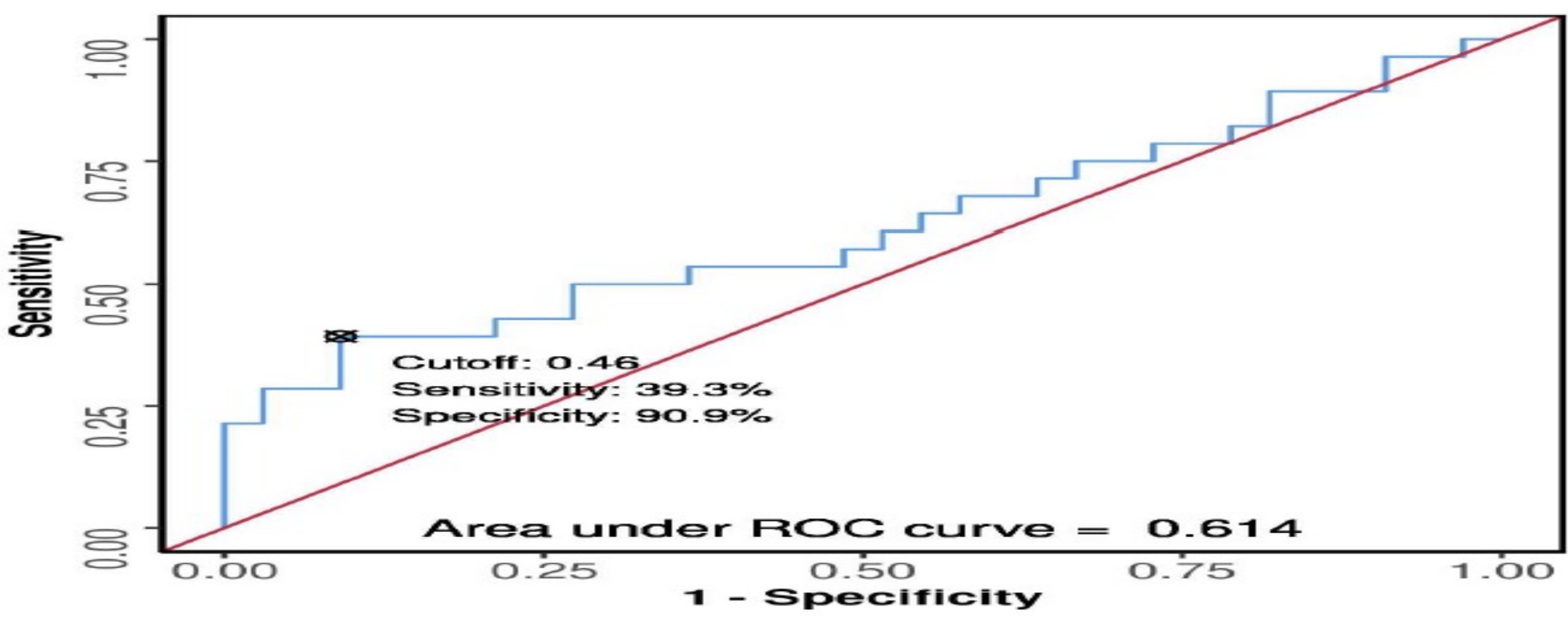


FIGURE 2- (AUROC) for multiple serum markers combined in predicting malignancy