



RED CELL DISTRIBUTION WIDTH TO TOTAL PLATELET COUNT RATIO AS A PROGNOSTIC MARKER OF ACUTE PANCREATITIS IN COMPARISON TO CT SEVERITY INDEX

General Surgery

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ABSTRACT

Background: Acute pancreatitis has variable outcomes. Early prediction of severity and mortality is essential. Objective: To evaluate RPR as a prognostic marker and compare it with CTSI. Methods: A prospective study of 100 patients was conducted. RPR was calculated from RDW and platelet count. ROC analysis was performed. Results: RPR was significantly higher in severe cases and non-survivors. AUC for RPR was 0.944 with sensitivity 91.7% and specificity 88.6%. Conclusion: RPR is a simple and reliable prognostic marker comparable to CTSI.

KEYWORDS

Acute pancreatitis, RPR, CTSI, RDW, Platelet count

INTRODUCTION

Acute pancreatitis is a common emergency with a wide clinical spectrum. Early identification of severe cases is crucial. Conventional scoring systems are complex, and CT-based scoring is often delayed. RPR is a simple hematological marker that may help in early risk stratification.

The RPR (Red Cell Distribution Width to Platelet Count Ratio) is calculated using a simple formula:

Explanation: $\text{RDW (\%)} = \frac{\text{Red Cell Distribution Width (from CBC report)}}{\text{Platelet Count } (\times 10^9/\text{L})} \times 100$ = Platelet count in standard units

MATERIALS AND METHODS

Study Design: Prospective analytical study

Sample size: 100 patients

Study period: May 2024–April 2026

Inclusion: All acute pancreatitis cases

Exclusion: Hematological disorders

Parameters: RDW, Platelet count → RPR, CT Severity Index, Clinical outcomes

Statistical Analysis: Mean $\pm$ SD, Chi-square test, ROC curve; $p < 0.05$ significant.

RESULTS

Demographics: Age >60 (37%), Male (65%), Female (35%)
Etiology: Alcohol (44%), Gallstones (35%), Others (21%)

Severity: Mild (55%), Moderate (31%), Severe (14%)

Mortality: Survivors (88%), Non-survivors (12%)

RPR vs Outcome:

Survivors: 0.068 ± 0.018

Non-survivors: 0.124 ± 0.021 ($p < 0.0001$)

ROC Analysis:

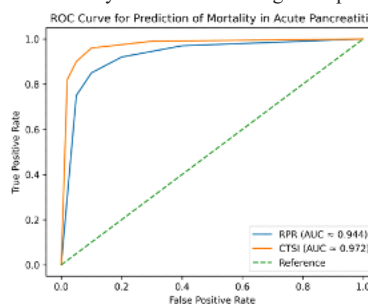
RPR: AUC 0.944, Sensitivity 91.7%, Specificity 88.6%
CTSI: AUC 0.972, Sensitivity 100%, Specificity 93.2%

DISCUSSION

RPR was significantly elevated in severe pancreatitis and non-survivors, indicating its strong prognostic value. It demonstrated excellent predictive accuracy comparable to CTSI. Being simple, cost-effective, and rapidly available, RPR can be used as an early bedside marker.

CONCLUSION

RPR is an effective and reliable prognostic marker in acute pancreatitis and can be used for early identification of high-risk patients.



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