

Peer Review

Review of: "Effectiveness of the PAS for Diagnosing the Severity of Acute Appendicitis in Children: A Cohort Study"

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The study you presented appears to be a solid and methodologically rigorous investigation of the Pediatric Appendicitis Score (PAS) in assessing the severity of acute appendicitis in children. Here's a breakdown of the strengths and areas for improvement:

Strengths:

- 1. Clear Research Question:** The study has a well-defined goal: evaluating PAS as a tool for diagnosing the severity of appendicitis. This is a pertinent and clinically useful question.
- 2. Cohort Design:** The cohort study design is appropriate for this type of investigation, allowing for the examination of associations between PAS and appendicitis severity.
- 3. Statistical Analysis:** The study uses appropriate statistical methods, including binomial logistic regression and ROC curve analysis, to assess the effectiveness of PAS. The use of AUC, sensitivity, specificity, and odds ratios adds rigor to the analysis.
- 4. Well-Defined Variables:** The study clearly differentiates between simple and complicated appendicitis based on surgical findings, and it uses a comprehensive set of PAS parameters for diagnosis.

Areas for Improvement:

Diagnostic Accuracy (AUC = 59.3%): While the study demonstrates that PAS ≥ 8 can increase the likelihood of complicated appendicitis, the relatively low AUC (59.3%) suggests that PAS alone may

not be a strong predictor of severity. AUC values closer to 80% or above are typically considered more robust, indicating that the PAS may not be sufficient by itself for diagnosing severity.

Sample Size: While 86 patients were included, the results may still benefit from a larger sample size to improve generalizability and statistical power. A higher sample size could lead to more definitive conclusions, especially in subgroup analyses.

Statistical Significance: The odds ratio (OR) for PAS ≥ 8 as a predictor of severity (OR = 2.246, p = 0.077) is close to being statistically significant but still falls outside the conventional 0.05 threshold for significance. This means that the association between PAS ≥ 8 and appendicitis severity is not conclusively supported by this study alone.

External Validation: The study doesn't appear to have validated the PAS scoring system against other diagnostic tools or clinical criteria. Including a comparison with other established markers or diagnostic methods for appendicitis could strengthen the findings.

Ethical Considerations: While the study mentions that patient consent was not required due to the use of secondary data, it would be beneficial to emphasize how patient anonymity and data confidentiality were ensured, especially in a pediatric cohort.

Conclusion:

Overall, this study contributes valuable insights into the limitations and potential of the PAS in predicting the severity of pediatric appendicitis. It establishes a foundation for future research to either refine the PAS or combine it with other diagnostic measures to improve clinical decision-making. The statistical findings are promising but not definitive, suggesting room for improvement in diagnostic accuracy and study design.

Declarations

Potential competing interests: No potential competing interests to declare.