

RIPASA score in diagnosis of suspected cases of acute appendicitis

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ABSTRACT

Background: Appendicitis occurs most commonly between the ages of 10 and 20 years and it has a male-to-female ratio of 1.4:1. The present study assessed validation of RIPASA score in diagnosis of suspected cases of acute appendicitis.

Materials & Methods: 86 patients with right iliac fossa pain and suspected to have acute appendicitis of both genders were assessed. All were assessed using the RIPASA scoring system on the basis of clinical assessment and hospital protocol, histopathological correlation done with a score. A score of 7.5 was considered a cut-off value for high probability of acute appendicitis.

Results: Out of 86 patients, males were 52 and females were 34. RIPASA score <5 was seen in 15, 5-7 in 20, 7.5- 11.5 in 38 and >12 in 13. Emergency appendectomy was performed on 62, positive HPE reports for appendectomy was seen in 54, negative HPE for appendectomy in 8, perforated appendix in 4 and wound sepsis in 7 cases.

Conclusion: RIPASA score is a better, easy, safe, and non-invasive diagnostic method for diagnosis of acute appendicitis.

Key words: acute appendicitis, barium swallow, RIPASA

INTRODUCTION

Appendicitis occurs most commonly between the ages of 10 and 20 years and it has a male-to-female ratio of 1.4:1.¹ The lifetime risk is 8.6% for males and 6.7% for females in the United States. Studies have indicated an association between acute appendicitis and the manifestation of colorectal cancer. In fact, 2.9% of patients who suffered from acute appendicitis were found to have colorectal cancer compared to 0.1% of those who did not.^{2,3}

The initial presentation involves periumbilical colicky pain around the midgut. Localized pain coincides with the parietal peritoneum irritation. The pain intensifies over a period of 24 hours, accompanied by nausea, vomiting, and loss of appetite.⁴ In 3.5% of appendicitis presentations, left iliac fossa deep palpation elicits pain in the right iliac fossa, which is termed Rovsing's sign. If the patient is found to have a positive Rovsing's sign, a barium swallow is then employed to confirm the diagnosis. Barium swallow was initially found to be 95% accurate.⁵

Alvarado and modified Alvarado scores are one of the most popular and most common used scores but validity of these scores are low in Asian population. Recently, Raja Isteri Pengiran Anak Saleha Appendicitis (RIPASA) score has been developed for the diagnosis of acute appendicitis in Asian population by Chee Fui Chong, Department of

Surgery RIPAS Hospital Brunei, Darussalam. Raja Isteri Pengiran Anak Saleha Appendicitis (RIPASA) score is a simple qualitative scoring system based on 14 fixed parameters (two demographic, five clinical symptoms, five clinical signs, and two clinical investigations, and one additional parameter FNRIC).⁶ The present study assessed RIPASA score in diagnosis of suspected cases of acute appendicitis.

MATERIALS & METHODS

The present study comprised of 86 patients with right iliac fossa pain and suspected to have acute appendicitis of both genders. All were included in the study with the written consent. Data such as name, age, gender etc. was recorded. A thorough history taking, clinical examination, and hematological investigations, urine routine, X-ray abdomen/chest, USG abdomen, and CT scan was performed. All were assessed using the RIPASA scoring system on the basis of clinical assessment and hospital protocol, histopathological correlation done with a score. A score of 7.5 was considered a cut-off value for high probability of acute appendicitis. Results of the study was tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

	Total- 86	
Gender	Male	Female
Number	52	34

Table I shows that out of 86 patients, males were 52 and females were 34.

Table II Distribution of patients based on RIPASA score

RIPASA	Number	P value
<5	15	0.01
5-7	20	
7.5-11.5	38	
>12	13	

Table II, graph I shows that RIPASA score <5 was seen in 15, 5-7 in 20, 7.5- 11.5 in 38 and >12 in 13. The difference was significant ($P < 0.05$).

Table III Patients characteristics

Parameters	Number
Emergency appendectomy performed	62
Positive HPE reports for appendectomy	54
Negative HPE for appendectomy	8
Perforated appendix	4
Wound sepsis	7

Graph I Distribution of patients based on RIPASA score

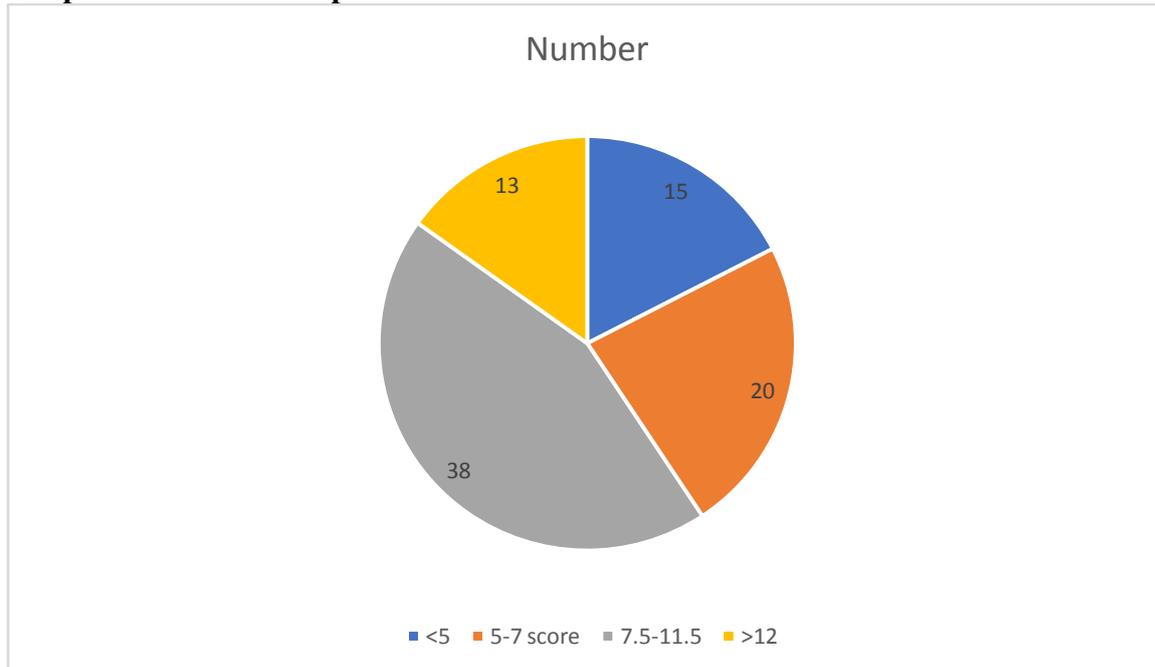
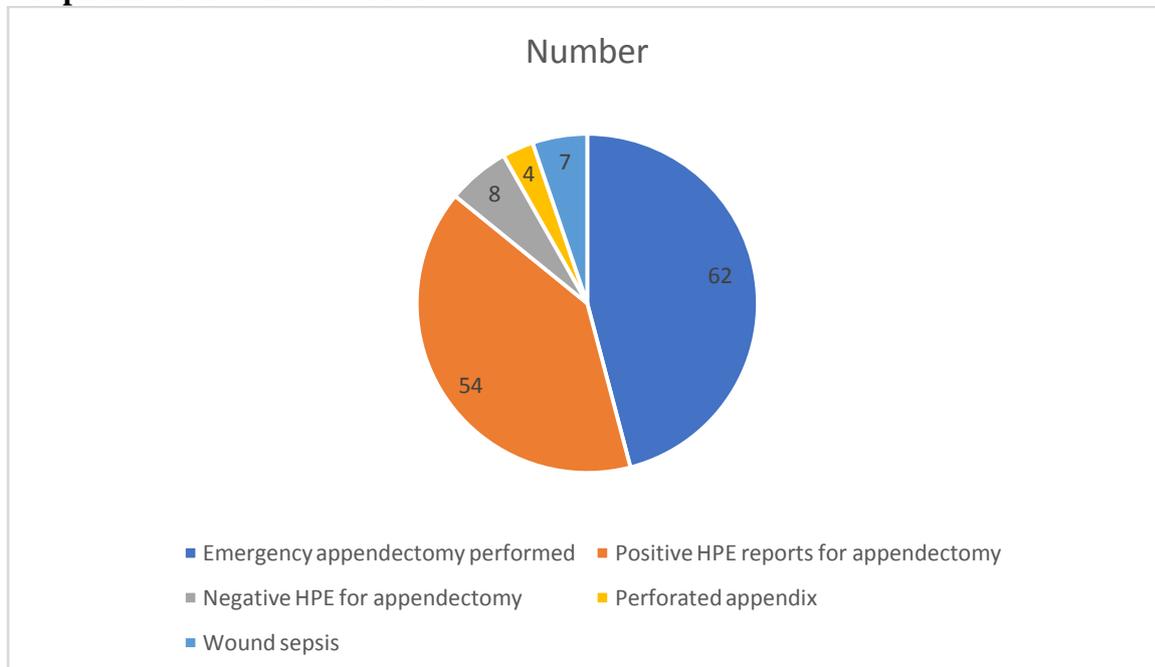


Table III, graph II shows that emergency appendectomy was performed on 62, positive HPE reports for appendectomy was seen in 54, negative HPE for appendectomy in 8, perforated appendix in 4 and wound sepsis in 7 cases.

Graph II Patients characteristics



DISCUSSION

Current guidelines continue to focus on early appendectomy. Uncomplicated appendicitis can be delayed in the hospital by 12-24 hours.⁷ On the other hand, early surgical intervention is thought to be associated with a lower risk of perforation. Conservative treatment with antibiotics was found to be 18% less effective than surgical treatment.⁸ Given substantial

crossover in studies, it is recommended to continue to pursue surgical intervention as the first-line therapy. Future studies employing different antibiotic regimens, both oral and intravenous, need to be conducted to examine the efficacy of antibiotics and explore the possibility of forgoing surgery for patients suffering from uncomplicated appendicitis.⁹ Non-operative management has been found to have a high success rate of 86.1%. On the other hand, the five-year recurrence of appendicitis in patients treated with antibiotics for acute appendicitis has been found to be 39.1%.¹⁰ The present study assessed RIPASA score in diagnosis of suspected cases of acute appendicitis.

In present study, out of 86 patients, males were 52 and females were 34. Singh et al¹¹ determined validation of RIPASA score in diagnosis of acute appendicitis and histopathological correlation. A prospective study of 200 patients presented to emergency or surgical OPD with right iliac fossa pain and suspected to have acute appendicitis were included. In a study of 200 patients, M:F ratio of 1.56:1. Sensitivity of the RIPASA score was 95.89% with specificity 75.92% and diagnostic accuracy of 90.5%, expected and observed rate of negative appendectomy were 8.5 and 12.35%, respectively. So there is net reduction in negative appendectomy rate by 3.85%.

We found that RIPASA score <5 was seen in 15, 5-7 in 20, 7.5- 11.5 in 38 and >12 in 13. Chong et al¹² in their study 200 consecutive patients who presented to the Accident and Emergency Department with right iliac fossa pain were recruited in the study. Both the RIPASA and Alvarado scores were derived, but decisions for appendectomy were based on clinical judgement. Receiver operating curve (ROC), sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for both scoring systems were calculated. Only 192 out of the 200 patients who satisfied the inclusion and exclusion criteria were included in the analysis. At the optimal cut-off threshold score of 7.5 derived from the ROC, the sensitivity, specificity, PPV, NPV and diagnostic accuracy of the RIPASA score were 98.0 percent, 81.3 percent, 85.3 percent, 97.4 percent and 91.8 percent, respectively. At the cut-off threshold score of 7.0 for the Alvarado score, the sensitivity, specificity, PPV, NPV and diagnostic accuracy were 68.3 percent, 87.9 percent, 86.3 percent, 71.4 percent and 86.5 percent, respectively. The RIPASA score correctly classified 98 percent of all patients confirmed with histological acute appendicitis to the high-probability group (RIPASA score greater than 7.5) compared with 68.3 percent with the Alvarado score.

We observed that emergency appendectomy was performed on 62, positive HPE reports for appendectomy was seen in 54, negative HPE for appendectomy in 8, perforated appendix in 4 and wound sepsis in 7 cases. Nanjundaiah et al¹³ compared prospectively RIPASA and Alvarado scoring system by applying them to 206 patients. Both scores were calculated for patients who presented with right iliac fossa pain during the study period. Depending on clinical judgment appendectomy was done. Post operative histopathology report was correlated with the scores. A score of 7.5 is the optimal cut off threshold for RIPASA and 7 for Alvarado scoring system. Sensitivity, specificity, positive predictive value (PPV) and negative predictive (NPV) for RIPASA & Alvarado system was done. The sensitivity and specificity of RIPASA score were 96.2% and 90.5% respectively. The sensitivity and specificity of Alvarado score were 58.9% and 85.7% respectively. RIPASA score correctly classified 96 percent of all patients confirmed with histological acute appendicitis to the high probability group (RIPASA score greater than 7.5) compared with 58.9% with Alvarado score (Alvarado score greater than 7.0; p-value less than 0.001).

CONCLUSION

Authors found that RIPASA score is a better, easy, safe, and non-invasive diagnostic method for diagnosis of acute appendicitis.

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