

Comparison of Ripapasa And Alvarado Scoring Systems for The Diagnosis of Acute Appendicitis

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ABSTRACT

Background and Objectives :

Comparison of sensitivity, specificity, positive predictive value and negative predictive value between RIPASA and Alvarado scoring system in the diagnosis of acute appendicitis in the patients presented with right lower abdominal pain.

Methods :

All patients presenting with right lower abdominal pain and who are suspected of having appendicitis above the age of 13 years were taken into the study. Relevent history including age, sex, duration of pain, nausea vomiting, anorexia and on examination right iliac fossa tenderness, guarding, rebound tenderness, rovsing sign were examined. And lab investigations include leukocyte count, urine analysis and (shift to left) were done.

Both scoring were applied to all the patients and surgery was done irrespective of score based on surgeon's decision.

Result:

- The RIPASA scoring has sensitivity 97.3%, specificity 71.6%, positive predictive value 77.4% and negative predictive value 96.3% while Alvarado scoring has sensitivity 71.6%, specificity 97.3%, positive predictive value 96.3%, negative predictive value 77.4% in our study.

Conclusion:

Thus in our study RIPASA scoring has better diagnostic accuracy in comparison to Alvarado scoring system, in the diagnosis of acute appendicitis.

Key words:

Acute appendicitis, RIPASA scoring, Alvarado scoring, Right iliac pain, appendicular anomalies, open appendicectomy, laparoscopic appendicectomy.

INTRODUCTION¹

- Vermiform appendix is considered a vestigial organ.
- Its inflammation produces clinical syndrome as acute appendicitis
- It is the most common cause of acute abdomen in young adults.
- Appendectomy is the most frequently performed emergency abdominal operation and is often the major surgical procedure done by surgical trainee.
- In our study, we have compare to simple clinical scoring system (RIPASA and Alvarado) in the diagnosis of acute appendicitis.
- By this we can avoid using the radiological investigations in the diagnosis of acute appendicitis.
- History, clinical examination and simple lab investigation have been taken in the scoring system for the diagnosis of acute appendicitis.
- Hence it is cost effective and less time consuming.

RESEARCH PROPOSAL

AIM OF THE STUDY

To compare Ripasa and Alvarado scoring systems in terms of diagnostic accuracy for acute appendicitis

PRIMARY OBJECTIVES:

1. To derive conclusions about the sensitivity, specificity, positive and negative predictive values, regarding the diagnostic accuracy of RIPASA scoring system in the diagnosis of acute appendicitis
2. To derive conclusions about the sensitivity, specificity, positive and negative predictive values, regarding the diagnostic accuracy of Alvarado scoring system in the diagnosis of acute appendicitis
3. To compare the sensitivity, specificity, positive and negative predictive values of RIPASA and Alvarado scoring system.

ELIGIBILITY CRITERIA

A.INCLUSION CRITERIA:

1. Patients more than 13 years of age groups in both sexes presenting with right iliac fossa pain and with suspicion of acute appendicitis
2. Patients consented for inclusion in the study according to designated proforma

B.EXCLUSION CRITERIA:

1. Patients less than 13 years of age
2. Patients who had already undergone any abdominal surgeries
3. Patient not consented for inclusion in the study.

METHODOLOGY:

From June 2014 to November 2015 patients presenting with RIF pain belonging to will be recruited in this study.

Relevant history including age, sex, nationality, RIF pain, migration of RLQ pain, anorexia, nausea and vomiting, duration of symptoms are taken.

Relevant examination including RIF tenderness, RIF guarding, rebound tenderness, Rovsing's sign and fever is done

Relevant lab investigations including TC, urine routine

RIPASA and Alvarado score will be applied to the patients

RIPASA SCORE		ALVARADO	
MALE	1	MIGRATORY RIF PAIN	1
FEMALE	0.5	ANOREXIA	1
AGE <39,9	1	NAUSEA	1
>40	0.5	TENDER RIF	2
RIF PAIN	0.5	REBOUND TENDERNESS	1
MIGRATION OF RLQ	0.5	ELEVATED TEMP	1
ANOREXIA	1.0	LEUCOCYTOSIS	2
NAUSEA AND VOMITING	1.0	SHIFT TO LEFT	1
DURATION <48 HRS	1		
>48 HRS	0.5	<4 – NO APPENDICITIS	
RIF TENDERNESS	1	4-6 – EQUIVOCAL	
RIF GUARDING	2	>6 - APPENDICITIS	
ROVSING SIGN	2		
REBOUND	1		
FEVER	1		
RAISED WBC COUNT	1		
NEGATIVE URINE ANALYSIS	1		
FOREIGN NATIONALITY	1		
SCORE	>7.5/15 - APPENDICITIS		

Intra operative findings and post operative histopathology reports will be reviewed and correlated with the both scorings.

If patient is not operated and discharged, the negative appendicitis will be confirmed during follow up visit or by phone call to see if the patient has got operated elsewhere

The RIPASA and Alvarado score results will be compared

RESULTS

TABLE – 1

AGE DISTRIBUTION

Age Distribution	No.of cases	Percentage
< 20	34	42.5
21 - 40	34	42.5
41 - 60	10	12.5
> 60	2	2.5
Total	80	100
Mean age	27.77	
SD	13.66	

Among 80 cases, more number of cases are with in 13-40 years group (85%)

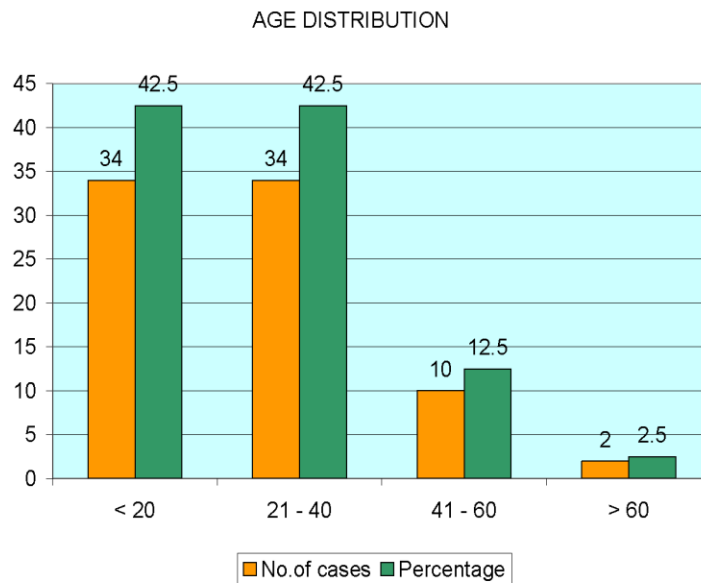


TABLE – 2
SEX DISTRIBUTION

Sex	No.of cases	Percentage
Male	44	55
Female	36	45
Total	80	100

Male sex predominated in our study (55%)

GENDER DISTRIBUTION

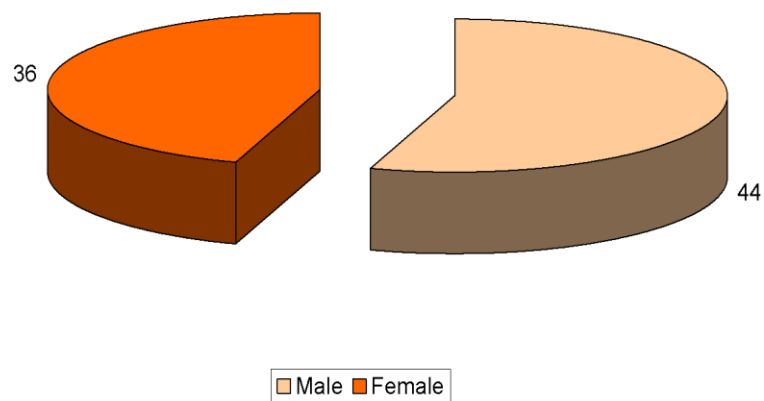


Table – 3

Comparison of Sex and RIPASA Score

Sex	RIPASA score	SD	p value
Male	10.14	2.08	0.921 NS
Female	10.08	2.67	

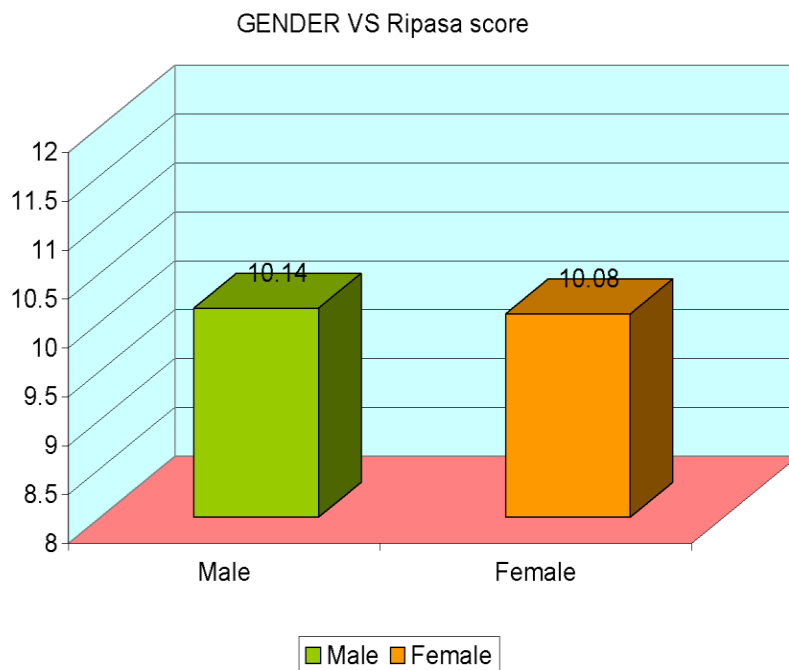


Table – 4
Comparison of Sex and Alvarado Score

Sex	Alvarado score	SD	p value
Male	7.39	1.72	0.201 NS
Female	6.89	1.72	

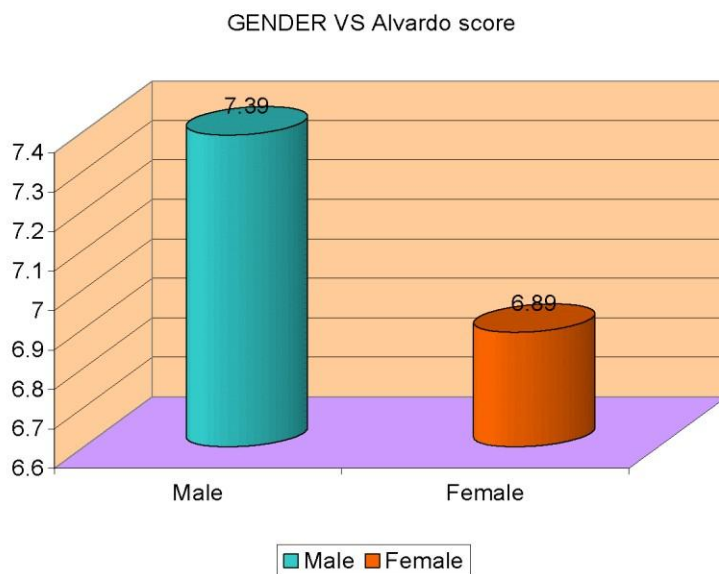


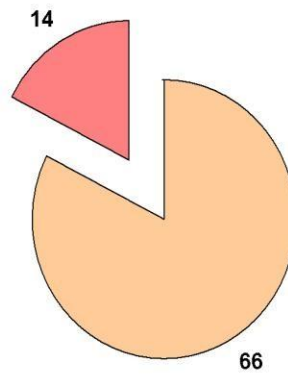
Table – 5

DURATION

Duration	No.of cases
≤ 2 days	66
> 2 days	14
Total	80

66% of cases have been presented within 2 days

DURATION



< 2 days > 2 days

Table – 6

Comparison of Mean for RIPASA and Alvarado Score for operated cases

Score	Mean	SD
RIPASA	10.11	2.35
ALVARDO	7.16	1.72

Pearson Coefficient
Correlation is 0.741 High correlation

For operated cases RIPASA score has a mean of 10.11 and Alvarado score has mean of 7.16

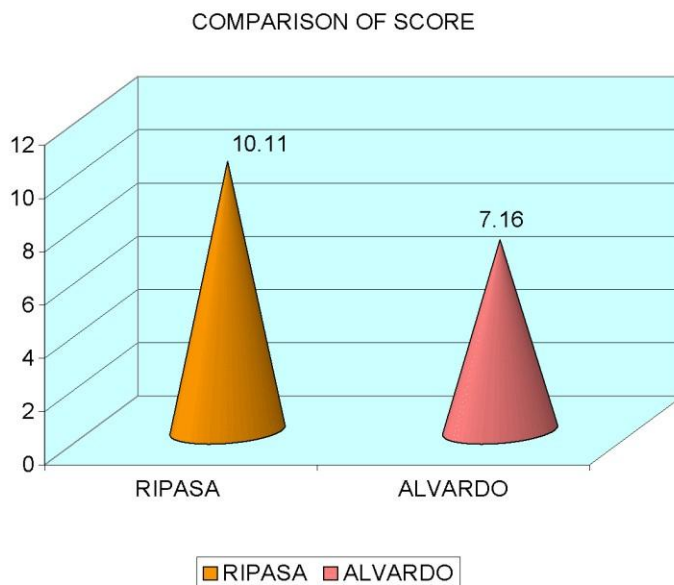


Table – 7

Comparison of Mean for RIPASA and Alvarado Score for non operated cases

Score	Mean	SD
RIPASA	4.17	1.81
ALVARDO	3.67	1.21

For not operated cases, RIPASA score has a mean score of 4.17 and Alvarado score has a mean score of 3.67.

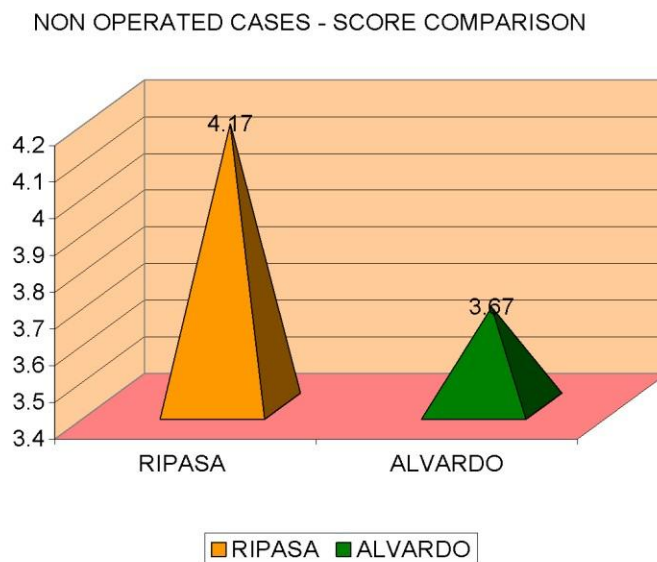


Table – 8

RIPASA score	No.of cases	Percentage
< 7.5	7	8.75
\geq 7.5	73	91.25

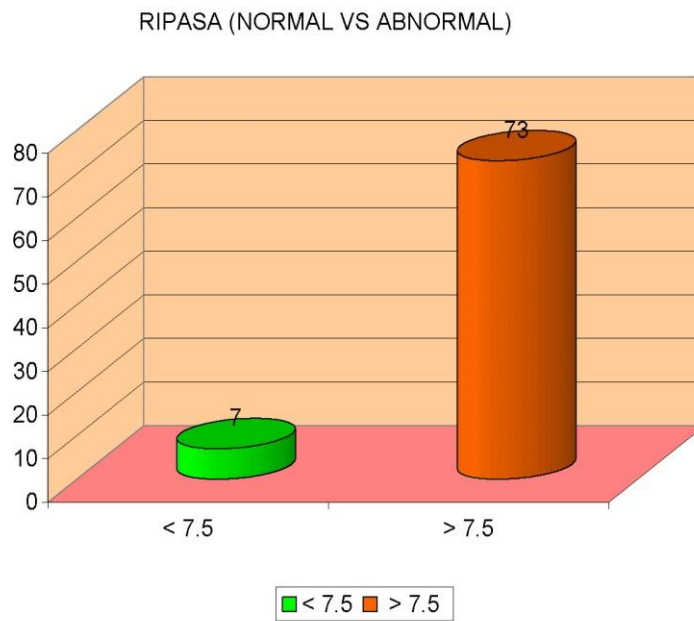


Table – 8

ALVARDO SCORE	No.of cases	Percentage
< 7.0	26	32.5
≥ 7.0	54	67.5

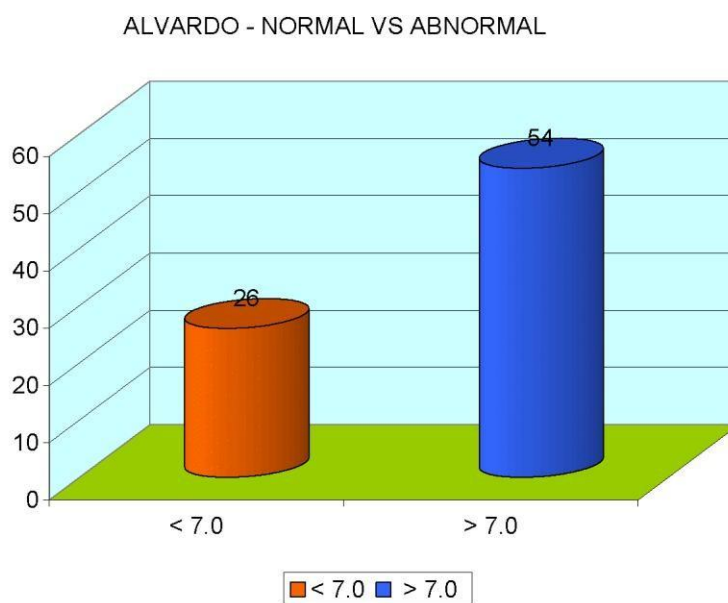
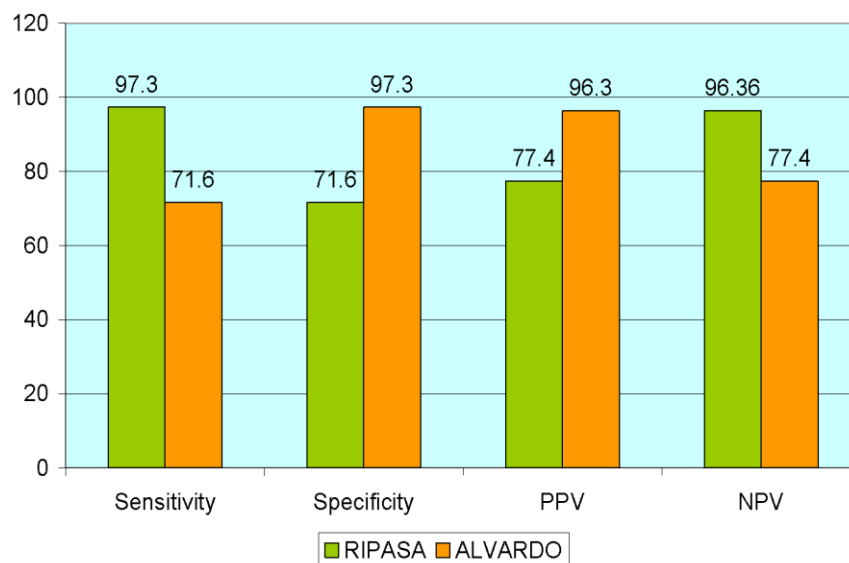


Table – 10

COMPARISON OF RIPASA AND Alvarado score

Variables	RIPASA	ALVARDO	P value
Sensitivity	97.3	71.6	<0.001 Sig
Specificity	71.6	97.3	<0.001 Sig
PPV	77.4	96.3	<0.001 Sig
NPV	96.36	77.4	<0.001 Sig



DISCUSSION

Acute appendicitis is one of the most common surgical emergencies encountered by junior surgeons on-call with emergency abdominal surgeries. A quick and correct diagnosis of acute appendicitis leading to early appendectomy and avoidance of complications arising from perforation can be difficult at times. Radiological modalities such as computed tomography imaging further aid in making a definite diagnosis and have been reported to have high sensitivity (94%) and specificity(95%) for the diagnosis of acute appendicitis. Thus in most large hospitals it is routine to request for CT imaging in all patients suspected of acute appendicitis. However such routine practice will inflate the cost of health care substantially, further more, the process of arranging for CT imaging may cause further delay for emergency appendectomy. A recent study has suggested that such indiscriminate use of CT imaging may lead to the detection of early low grade appendicitis and unnecessary appendectomy in a condition that could otherwise have resolve spontaneously with antibiotic therapy.

The Alvarado score, which was developed in 1986, was simple additive scoring system to help with the diagnosis of acute appendicitis. Although it showed very good sensitivity and specificity when applied in a western population, several subsequent studies have shown its limitations when applied in an Asian or oriental population. As a result a new scoring system called the RIPASA score which is more extensive yet simple additive scoring system consisting of 14 fixed parameters and an additional parameters and an

additional parameters (NRIC). All the parameters are easily obtained from a good clinical history, examination and investigations. In our study, the RIPASA score has been shown to achieve a better sensitivity 97.3% and specificity 71.6% then the Alvarado scores sensitivity of 71.6% and specificity of 97.3%.

This study compared the RIPASA and Alvarado score in 80 cases who presented to GRH Madurai- surgery department with complaints of RIF pain and who were suspected of acute appendicitis. The RIPASA score considerably better than the Alvarado score in terms of correctly diagnosing patients with acute appendicitis as well as found to be as those who were negative for acute appendicitis.

In our study using RIPASA score 97.3% patients who actually had acute appendicitis were correctly diagnosed and placed in the high probability group (RIPASA >7.5) and managed appropriately whereas it is only 71.6% when using Alvarado score on the same population sample. Similarly for patient who were classified in the low probability group ie true negative group with RIPASA score < 7.5 by correctly diagnosing 96.3 % of patient who did not have acute appendicitis whereas with Alvarado score <7, which only managed to correctly diagnose 77.4% (p <0.0001).

The RIPASA score is a useful rapid diagnostic tool for acute appendicitis especially in the setting of the A & E as it requires only the patients demographics (age, gender) ,good clinical history (RIF pain ,migration

to RIF , anorexia, nausea and vomiting) clinical examination (RIF tenderness, localised guarding, rebound tenderness, rovsing sign and fever) and two simple investigations (raised WBC, negative urine analysis performed at triage, which is defined as an absence of red and white blood cells, bacteria and nitrates).

CONCLUSION

RIPASA score is accurately a much better diagnostic scoring system for acute appendicitis compared to the Alvarado score with the former achieving significantly higher sensitivity, negative predictive value .The 14 fixed parameters can be easily and rapidly obtained in any population setting by taking a complete history and conducting a clinical examination and two simple investigations. The options of having a additional parameters make the RIPASA score more flexible and adaptable to different geographical regions. In terms of health care cost savings, the use of RIPASA score may help to reduce unnecessary and expensive radiological investigations.

Thus in our study RIPASA score has better diagnostic accuracy in comparison to Alvarado scoring system in the diagnosis of acute appendicitis.

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