ORIGINAL RESEARCH PAPER

General Surgery

ROLE OF MODIFIED ALVARADO SCORE IN THE DIAGNOSIS OF ACUTE APPENDICITIS

KEY WORDS: Appendicitis, Diagnostic modalities, Scoring system

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ABSTRACT

Introduction: Acute appendicitis is one of the most common acute surgical illness. Diagnosis of acute appendicitis always remains a challenge. Modified Alvarado Scoring System (MASS) is a cheap and quick diagnostic modality which can be done in the emergency set-up.
Aim: To test the efficacy and diagnostic accuracy of MASS in the diagnosis of acute appendicitis.
Materials and Methods: Prospective observational study type of study was conducted from January 2015 to December 2016 (12 months) in the Department of General Surgery BANKURA, west bangal.
Results: Most of the patients having a MASS of 7 or higher were found to have acute appendicitis in comparison to those having score <7. The sensitivity and specificity of MASS were 96.25%,75% with acceptable Positive and Negative predictive values 93.90%and83.33% respectively.
Conclusion: The Modified Alvarado Scoring System is a simple and efficient diagnostic tool for the diagnosis of acute appendicitis.

INTRODUCTION

Acute appendicitis is the most common acute abdominal emergency requiring urgent surgical intervention [1]. It has an estimated lifetime prevalence of 7% [2]. Efforts are being made to come to an early diagnosis and interventions are required [3]. Failure to make early diagnosis may lead to high morbidity [4]. Acute appendicitis may sometimes present with atypical presentations and the diagnosis becomes more challenging when the symptom overlap with some other disease conditions [5]. The Modified Alvarado Scoring System (MASS) which uses some clinical signs and symptoms was found to be simple and easy to use scoring system for the diagnosis of acute appendicitis and can be used in the emergency setting [6,7].

MATERIALS AND METHODS

Prospective observational type of study was conducted in General Surgery Department of Bankura Sammilani Medical College and Hospital, Bankura, India over a period of one year from January 2015 to December 2016 after obtaining the Institute Ethics Committee Clearance. A total of 100adult patients were enrolled in the study .Patients presenting with acute pain right lower abdomen and suspected to suffer from acute appendicitis were included in the study without any randomization.Patients presenting to the hospital with acute pain in the right lower abdomen was subjected to clinical examination and data was collected as per the required format of the Modified Alvarado Scoring System [Fig-1] and blood was collected at that time itself for total leucocyte count, Positive predictive value and Negative predictive value of MASS were found to see the efficacy of MASS in the diagnosis of acute appendicitis. Descriptive statistics was used for the statistical analysis.

Symptoms	Score
Migratory right iliac fossa pain	1
Nausea/Vomiting	1
Anorexia	1
Signs	
Tenderness in right iliac fossa	2
Rebound tenderness in right iliac fossa	1
Elevated temperature	1
Laboratory Findings	
Leucocytosis	2
Total	9

[Fig-1] [8].

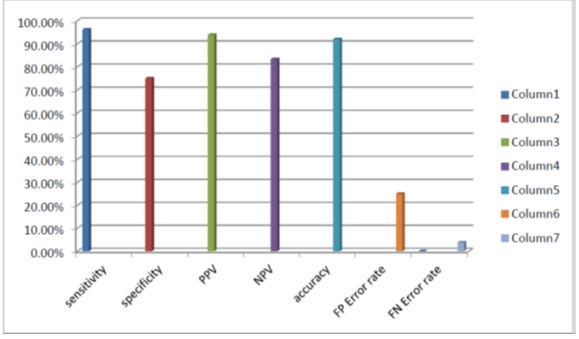
RESULTS

About 80% of appendix was found to be inflamed at surgery [Table 1] and confirmed on histopathological examination after surgery. Most of the patients having a MASS of 7 or higher were found to have acute appendicitis in comparison to those having score <7 .

Mass Versus Histopathological Findings In Whole Group [Table 1]

MASS	Histopathological findings					
	POSITIVE		NEGATIVE		TOTAL	
	No.	%	No.	%	No.	%
≥7	77	77%	5	5%	82	82%
<7	3	3%	15	15%	18	18%
TOTAL	80	80%	20	20%	100	100%

Analysis Of Modified Alvarado Score In Diagnosis Of Acute Appendicitis [Table 2]



DISCUSSION

Acute appendicitis is a clinical diagnosis. A negative appendicectomy rate of 20-40% has been reported in the literature and surgeons in order to avoid the complications of perforated appendicitis usually accepta negative appendicectomy rate of about 15-20% [7]. A higher threshold in performing appendicectomy may improve its diagnostic accuracy but carries

an increased risk of appendicular perforation and sepsis; thereby increasing morbidity and mortality [9]. Ultrasonography or computed tomography imaging may improve the diagnostic accuracyof acute appendicitis but it is associated with an escalated cost [9].

Scoring systems may improve the diagnostic accuracy of acute appendicitis [10].

The original Alvarado Scoring System was based on three signs, three symptoms and two laboratory data. The Modified Alvarado Scoring System (MASS) where shift of neutrophil count to the left is omitted has also been found to be a quick and inexpensive diagnostic tool for diagnosingacute appendicitis even though the diagnostic accuracies vary [10-12]. The sensitivity, specificity, positive predictive value and negative predictive values in our series were 96.25%,75% 93.90%and83.33% respectively.. Similar results have been obtained by Kanumba et al., with a sensitivity, specificity, positive predictive value and negative predictive values of 94.1%, 90.4%, 95.2% and 88.4% respectively [4].

Nanjundaiah N et al., found sensitivity, specificity, positive predictive value and negative predictive values of 58.9%, 85.7%, 97.3% and 19.1% respectively for MASS [9].

Conclusion

To conclude it may be said that MASS is an inexpensive tool for the diagnosis of acute appendicitis with a variable sensitivity and specificity and may be used in day to day practice.

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