ORIGINAL ARTICLE

Efficacy of Alvarado Score in Diagnosing Acute Appendicitis

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ABSTRACT

Aim: To reduce incidence of such negative appendectomies, efficacy of Alvarado score has been reevaluated in the present study.
Design: This is prospective observational study conducted in DHQ hospital Sargodha
Methods: We enrolled 100 adult patients with symptoms suggestive of acute appendicitis and categorized them according to their Alvarado score into three categories.
Results: In all 82 patients were operated according to their Alvarado score and deterioration in their clinical condition. Most of the patients in class I were safely discharged on oral antibiotics after few hours of observation.Class II patients produced mixed results but still most (12.1%) out of 17 operated had inflamed appendix. All patients in class III were operated and found to have inflamed appendix in majority(68%) of cases with minimum number of negative appendectomies (6%). Thus, high scores (7-10) particularly proved quite accurate in predicting the need for appendectomy in a given case. While low scores (1-4) were safe enough to discharge patients.
Keywords: Alvarado score, Acute appendicitis, Negative appendectomy.

INTRODUCTION

Acute appendicitis is one of the commonest abdominal emergencies on surgical floor. Diagnosing this condition still confounds surgeons even in this day and age when high tech gadgets are available.

Its diagnosis still largely depends on the clinical experience and acumen of the examiner. Abdominal ultrasound is though handy at many places and can be used in certain situations to facilitate the diagnosis but highly subjective nature of its findings makes its conclusions quite dubious at times.

Diagnostic laparoscopy and CT scan are also used selectively but their usage is an expensive affair and certain degree of learning curve is involved in interpreting their results. These factors hinder their universal acceptability in clinical practice.

Since it's imperative not to miss a definite case of acute appendicitis, it has been a tradition to proceed for appendectomy even in the absence of an objective diagnosis[1] as missing such a condition may result in even mortality in certain situations. On the other hand, doing an unnecessary operation resulting in negative appendectomy has its own side effects and patients can and do suffer as an aftermath of such uncalled-for interventions. Though almost up to 40% negative appendectomies are performed worldwide and is considered a legitimate practice, there has always been an urge in surgeon community to reduce this incidence to minimum possible[2,3,4]. Complications are reported in 18% of such negative explorations[5].

To reduce the incidence of such negative appendectomies, many different objective bedside scoring systems have been proposed but the one that gained popularity is Alvarado scoring system because of its easy applicability and objectivity[6,7,8].

MATERIALS & METHODS

We enrolled 100 patients for this prospective observational study conducted at DHQ hospital Sargodha from Jan 2016 to Jan 2017. We only selected adult patients aged more than 18 years old and excluded cases with the possible complications of acute appendicitis like perforation, appendicular mass and those with the signs of peritonitis.Patients were catagorized using Alvarado score as shown in the table below and grouped into three classes.

Table 1:Alvarado Score

Symptoms	**Score**
Migratory pain in right iliac fossa	1
Nausea & vomiting	1
Anorexia	1
Signs	
Right iliac fossa tenderness	2
Fever	1
Rebound tenderness in right iliac fossa	1
Laboratory tests	
Leucocytosis	2
Neutrophilic shift to left	1
Total	**10**

In class I were categorized patients with the score 1-4 .In class II patients with score 5-6 were included and in the class 3 were patients with the score range from 7 to 10.

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Patients in class I were given antibiotics, observed for few hours and then discharged. Patients in class II were given antibiotics and then observed for either increase in their score or deterioration in their clinical status. In both situations they were switched to class III and were operated. Patients in class III were all invariably operated.

Operative findings were noted and specimen removed was sent for histopathology. Final biopsy report confirmed or refuted the pre operative suspicions for acute appendicitis based on Alvarado scores thus proving its efficacy.

RESULTS

Table 2:

Diagnosis	Class I (1-4) n=15	Class II (5-6) (n=22)	Class III (7-10) (n=63)
Inflamed appendix	0	10(12.1%)	56(68.2%)
Negative appendectomy	02(2.4%)	05(6.09%)	05(6.09%)
Ruptured ovarian cyst	-		
Meckle's diverticulum	-	02(2.4%)	
Mesenteric lymphadenitis.	-		02(2.4%)

A total of 82 patients were operated.

DISCUSSION

There were a total of 15 patients in class I (1-4). We operated on two of these patients but couldn't find any inflamed appendix. These two negative appendectomies were probably because of our overzealous attempts to avoid possible fall out of missing an acute appendicitis and too much reliance on our subjective clinical assessment rather than depending on objective clinical scoring system. Rasoolbux et al however reported 3 patients (1.6%) with inflamed appendix in this score range[10]. In general, it's safe to discharge such patients on oral antibiotics.

Patients in class II were 22 in total in our study. 17 of them have to be operated and we found inflamed appendix in 10(12.1%) patients with 5(6%) negative appendectomies. Rasoolbux et al reported almost similar results[10].

In class III there were 63 patients and all of them were operated with inflamed appendix found in 56(68%) of patients. While the rate of negative appendectomy remained low i.e., around 6%.Rasoolbux et al reported 10.2% cases in this score range where they found normal appendix.Rasoolbux et al found almost 63% cases with inflamed appendix in this class while Abdul Ghani et al found anoverwhelming majority of casesaround more than 50% with inflamed appendix or its complications in patients with scores from 8 to 10.

In our study overall , there were around 15% cases that turned out to be negative for inflamed appendix while Rasoolbux et al reported 18.9% negative appendectomies. These results are comparable to other such studies[12]. Abdul Ghani et al however reported an impressive 3.84%[11].

It's clear that higher the Alvarado score, the more accurate it is in determining the presence of inflamed appendix and becomes more reliable in decision making.

CONCLUSION

Alvarado score is accurate, reliable, easy to learn and apply at bedside. It's being very objective reduces the subjective bias amongst clinicians and make results reproducible and communicable.

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