

Clinical Study of Acute Appendicitis with Special Reference to Alvarado Score

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Abstract

Background: Acute appendicitis is the acute inflammation of the appendix. It is surgical emergency, which is associated with morbidity and mortality occasionally. There are many scoring systems for the diagnosis of acute appendicitis, of these Alvarado score is simple scoring system that can be instituted easily in outpatient setting. It is purely based on history, clinical examination and few laboratory tests. The objectives of the study were to evaluate efficacy of Alvarado scoring system in preoperative diagnosis of acute appendicitis and correlating it with postoperative findings. **Material and Methods:** A prospective study was conducted on 45 patients presenting with symptoms and signs of acute appendicitis at Dr. Vasanttrao Pawar Medical College, Nashik from August 2014 to December 2016. The patient who met the inclusion criteria were evaluated using Alvarado scoring system. **Result:** In present study 45 cases with a clinical diagnosis of acute appendicitis were studied. Majority (44.44%) were in the age group of 21-30 years. In this study, 24 patients (53.33%) were male and 21 patients (46.67%) were female with male to female ratio (1.1:1). Pain was the most common presenting symptom (100%). Out of 45 patient 34 patients (75.56%) have score >7 and 11 patient (24.44%) have score <7 and among these 38 patients (84.44%) got operated. Appendix was inflamed in 63.16% cases. **Conclusions:** Alvarado scoring system is an easy, simple, cheap, reliable and safe tool in pre operative diagnosis of acute appendicitis and can work effectively in routine practice.

Keywords: Alvarado Scoring System, Appendicitis

1. Introduction

Appendicitis is an acute inflammatory condition of the appendix. It is a surgical emergency and most of the cases require immediate removal through surgery either open^{1,2} or laparoscopic³ appendectomy. There are many diagnostic modalities available like x ray⁴, ultrasonography⁵, computed tomography^{6,7} and barium enema study⁸⁻¹⁰ etc for diagnosis of appendicitis, but even these the rate of misdiagnosis of appendicitis and negative appendectomy has remain constant. There are many scoring systems for discriminating between acute appendicitis and nonspecific abdominal pain¹¹. Alvarado scoring system is one of them, available for the diagnosis of acute appendicitis and is purely based on history, clinical examination and few laboratory tests and is very easy to apply¹². It is an aid in diagnosing acute appendicitis and arriving at a conclusion whether a particular case should be operated or not, thereby reducing the number

of negative laparotomies.

The present study aims at evaluating the efficacy of Alvarado scoring system in preoperative diagnosis of acute appendicitis and correlating it with postoperative finding.

ALVARADO SCORE	
Symptoms	SCORE
Mig. RIF Pain	1
Anorexia	1
Nausea/ Vomiting	1
Signs	
Tenderness / RIF	2
Rebound Tenderness RIF	1
Elevated Temperature	1
Lab.finding	
Leucocytosis	2
Shift to Left of Neutrophils	1
Total Score	10

2. Methods

The present study is a prospective study of 45 patients presenting with symptoms and signs of acute appendicitis to the Surgery department between a periods of August 2014 to December 2016.

2.1 Inclusion Criteria

All clinical suspicious cases of first episode of acute appendicitis irrespective of age and gender.

2.2 Exclusion Criteria

- Case of recurrent appendicitis.
- Pre existing co morbid appendicular pathology such as malignancy, appendicular mass or abscess.
- Patient with pre existing ileocecal pathology like tuberculosis or malignancy.
- Patients not willing to give consent.

After initial evaluation of the patient in the casualty/ opd of medical hospital by department of General surgery, patients with the diagnosis of acute appendicitis were admitted to the wards. Then after finding the suitability as per inclusion and exclusion criteria, patients were selected for the study and briefed about the nature of the study, the interventions used and the written informed consent was obtained. The detailed history, clinical examination, laboratory investigations were done.

Then they were evaluated using Alvarado scoring system. Each patient was given a score and based on the score were divided into two groups.

Group 1: Score 7 - 10: Emergency surgery group (most likely acute appendicitis).

Group 2: Score <7: Observation group (probably/unlikely acute appendicitis).

Decision for appendicectomy was taken by the surgeon. The Details of intraoperative findings were recorded and definitive diagnosis was based on histopathological assessment of the specimen.

3. Result

Patients were divided in to two groups according to sex, 24 were male and 21 were female (table-1). Men are at greater risk than women for developing appendicitis¹³.

Table 1. Gender distribution

Gender	No. of patients	Percentage
Male	24	53.33%
Female	21	46.67%

All the 45 patients presented with pain in right iliac fossa (100%). Nausia/vomiting and fever was next common complaint present in 34 patients (75.56%). Anorexia was present in 32 patients (71.11%) (table-2).

Table 2. Individual feature of Alvarado score

Individual feature of Alvarado score	Frequency	Percentage
Migration of pain to right iliac fossa	45	100.00%
Anorexia	32	71.11%
Nausea/ Vomiting	34	75.56%
Right iliac Fossa Tenderness	42	93.33%
Rebound Tenderness	30	66.67%
Fever	34	75.56%
WBC counts	34	75.56%
Shift to Left	12	26.67%

Table 3. Frequency Distribution of Alvarado score

Alvarado Score	Frequency	Percentage
4	3	6.67%
5	4	8.89%
6	4	8.89%
7	10	22.22%
8	13	28.89%
9	11	24.44%

Out of 45 patients, 13 patients (28.89%) had Alvarado score 8, 11 patients (24.44%) had score 9, 10 patients (22.22%) had score 7, 4 patients (8.89%) had score 6, 4 patients (8.89%) had score 5 and 3 patients had Alvarado score 4 respectively (table-3).

Among 45 patients, 38 patients (84.44%) got operated and remaining 7 patients (15.56%) conservatively treated. In operated cases, simple inflamed appendix were found intra-operatively in 24 (63.16%) patients, 7 (18.42%) had gangrenous appendix and 7 (18.42%) had perforated appendix.

In this study, among 38 operated patients, 4 patients (10.53%) had post operative complications (wound infection) and remaining 34 patients (89.47%) had no post operative complication (table-4).

Table 4. Post operative complication

Post-Operative Complication	Frequency	Percentage
Wound Infection.	4	10.53%
Nil	34	89.47%
Total	38	100.00%

4. Discussion

Acute appendicitis is common abdominal emergency

throughout the world. Despite the advances in the diagnostic field, the diagnosis of acute appendicitis remains enigma for the surgeons. The misdiagnosis and delay in surgery can lead to serious complications. At present there are many scoring systems for the diagnosis of acute appendicitis, of these Alvarado score, is a simple scoring system that can be instituted easily in outpatient setting. It is a cheap and quick tool to apply in emergency room. It was based on three symptoms, three signs and two laboratory findings, a total score of 10. The score ≥ 7 indicates high probability of acute appendicitis.

In the present study total 45 patients were studied. Out of which 24 (53.53%) were male and 21(46.67%) were female with male female ratio 1.1:1.

In the present study, pain in right iliac fossa was the commonest presenting symptom and had been observed in all 45 cases in the present series. This is comparable with study done by Fashina IB et al., in which right iliac fossa pain was present in all case of acute appendicitis¹⁴. The Nausia/Vomiting was seen in 34 cases (75.56%). This is comparable with study done by Ali N et al., in which nausea/vomiting was present in 85.7% of cases of acute appendicitis¹⁵.

In this study, none of the patient with gangrenous and perforated appendix had an Alvarado score of less than 7. This means that the complication rate more as the Alvarado score high. The patient with score between 5-7 may safely be kept under observation followed by serial re-evaluation with Alvarado scoring and the decision to operate or not may be changed accordingly.

Therefore, the Alvarado scoring system should be used in clinical practice for determining the most probable management option in patients with different scores and clinical suspicion. However, the scoring system is not 100% reliable and diagnostically accurate, but it can be used as a complimentary aid to decide which management option is particularly suitable for the patient's benefit.

5. Conclusion

The conclusion drawn from the present study is that the patient with right iliac fossa pain with provisional diagnosis of acute appendicitis, Alvarado score helps in the diagnosis of acute appendicitis. The negative appendectomy rate can be decreased if appendectomies are avoided in case where Alvarado score is < 7 . If Alvarado score > 7 , high suspicion of gangrenous or perforated appendix should be kept in mind and the early interventions is to be taken to reduce the further complications.

This scoring system is quick and cost effective and it can be useful in any hospital with basic lab facility or day care centre as an adjunct to clinical diagnosis.

6. References

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