ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 02 | February - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ASSESSMENT OF ROLE OF ALVARADO SCORE IN DIAGNOSIS OF ACUTE APPENDICITIS

General Surgery

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ABSTRACT

Background: Acute Appendicitis is one of the commonest conditions responsible for admission of the patients to hospital for surgical treatment.Diagnosis is mainly clinical,delay in diagnosis definitely increases the morbidity,mortality and cost of treatment. The present study was conducted to assess role of Alvarado score in diagnosis of acute appendicitis.

Materials and methods: 64 suspected cases of acute appendicitis of both genders were evaluated according to Alvarado scoring system as score 1-4: appendicitis unlikely, 5-6: appendicitis possible and 7-10: appendicitis highly probable.

Results: Out of 64 patients, males were 34 and females were 30. Score 1-4 was seen in 10, 5-6 in 19 and 7-10 in 35. The difference was significant (P< 0.05). Alvarado scoring diagnosed 32 cases correctly. The positive predictive value was 91.4%.

Conclusion: In our study we found that high Alvarado score was indicative of acute appendicitis.

KEYWORDS

Alvarado score, Acute appendicitis, Positive predictive value.

INTRODUCTION

Acute Appendicitis is one of the commonest conditions responsible for admission of the patients to hospital for surgical treatment. The hospitalization rate for patients of 12-60 years old ranges from 18% to 42%. Acute appendicitis is the most common cause of an acute abdomen in young adult with a life time risk of about 6%[1]. Difficulty in diagnosis arise in very young, elderly patients and females of reproductive age because they usually have atypical presentation and many other conditions also present like appendicitis and literature shows that 2-7% of all adults on exploration have diseases other than appendicitis[2].Fitz described the traditional signs and symptoms of acute appendicitis. The diagnosis of acute appendicitis is mainly clinical based on history, clinical examination and sometimes aided by laboratory investigations. Imaging modalities are not requested routinely because they have been shown to add very little information unless there are complications. The definitive diagnosis is achieved at surgery and after histopathologic examination of the resected appendix. delay in diagnosis definitely increases the morbidity, mortality and cost of treatment. .A number of scoring systems have been developed for aiding the early diagnosis of acute appendicitis[5]. Scoring systems are a valuable and valid instrument of discrimination between acute appendicitis and nonspecific abdominal pain. Alvarado scoring system, which was introduced in1986, is one of these systems and is based on history, clinical examination and few laboratory findings[3].The present study was conducted to assess role of Alvarado score in diagnosis of acute appendicitis.

MATERIALS & METHODS

The present study was conducted among 64 suspected cases of acute appendicitis of both genders in Department of Genera surgery,Nalanda Medical College and Hospital,Patna from May 2020 to April 2021. All agreed to participate with written consent.

Inclusion Criteria

All cases clinically suspected to be suffering from acute appendicitis between 12-60 years of age.

Exclusion Criteria

- All patients with palpable lump in right iliac fossa.
- All patients with previous history of chronic and recurrent appendicitis.
- Children below 12 years of age and adults above 60 years.

Demographic data such as name, age, gender etc. was recorded. A thorough clinical examination was performed. Baseline investigations were performed. Findings were evaluated according to Alvarado scoring system as score 1-4: appendicitis unlikely, 5-6: appendicitis possible and 7-10: appendicitis highly probable. Patient with Alvarado score 7 or greater, were subjected to Appendicectomy and rest of the patients were managed conservatively. Histopathological findings of Appendicectomy samples were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Table 1 : Alvarado score

Features	Score
Migration of pain	1
Anorexia	1
Nausea	1
Tenderness in right lower quadrant	2
Rebound pain	1
Elevated temperature	1
leucocytosis	2
Shift of WBC count to left	1
Total	10

RESULTS

Table 1: Age distribution of patients

Gender	Number
Male	34
Female	30
Total	64

Table 2: Alvarado scoring system

Alvarado scoring system	Number	P value – 0.02
1-4	10	
5-6	19	
7-10	35	

Table 3: Diagnostic accuracy of Alvarado score

Group	Confirmed appendicitis	Normal appendix
Alvarado score >7 (35)	32(True positive)	03 (False positive)
Alvarado score <7 (29)	22 (False negative)	07True negative)

DISCUSSION

Acute appendicitis is one of the commonest surgical emergencies in all ages. Diagnosis is mainly clinical, delay in diagnosis definitely increases the morbidity, mortality and cost of treatment, more aggressive surgical approach has resulted in increased white appendectomies[6].Acute appendicitis has remained the common acute surgical condition of the abdomen in all ages and of course, a common disease in surgical practice. Even after elapse of more than 120 years since its first description this common surgical disease continues to remain a diagnostic problem and can baffle best of the clinician. Delay

in diagnosis definitely increases the morbidity, mortality and cost of treatment[7].In equivocal cases, however, aggressive surgical approach as "when in doubt take it out" has resulted in increased white appendectomies. Presentations of acute appendicitis can mimic variety of acute medical and surgical abdomino-thoracic conditions. Early diagnosis is a primary goal to prevent morbidity and mortality in acute appendicitis[8].The present study was conducted to assess role of Alvarado score in diagnosis of acute appendicitis.In present study, out of 64 patients, males were 34 and females were 30. Jain et al[9] in their study a total 100 cases hospitalized with abdominal pain, suggestive of acute appendicitis on the basis of modified Alvarado scoring system and were subsequently operated. Males belonging to young age group of 21-30 were most commonly affected. Abdominal pain was seen in 100% of patients. Fever seen in 87% of patients and vomiting in78%. Modified Alvarado score of 9 had positive predictive value of 100% while negative predictive value 8.9%, while score between 7-8 had positive predictive value of 98.9% and negative predictive value27.8%. The sensitivity was 86.1% and specificity was 83.3%. The ultrasonography showed a sensitivity of 94.68%. In present study rate of total white appendectomy was 6%. The Modified Alvarado scoring system is a reliable and practicable diagnostic modality to increase the accuracy in diagnosis of acute appendicitis and thus to minimise unnecessary appendectomy[4].We found that score 1-4 was seen in 10, 5-6 in 19 and 7-10 in 35. Alvarado scoring diagnosed 64 cases correctly. The positive predictive value was 91.4%. Awayshih et al[10] in their study found that out of total 100 patients, appendicitis was confirmed in 80 patients, thus giving negative appendectomy rate of 20% (male 6%, female 14%). Perforation rate was 4%. Positive predictive value was 89%. The sensitivity was 54% and specificity 75%. Alvarado score is not a sensitive tool for aiding diagnosis of acute appendicitis.Waskale et al[11] validated the role of Alvarado score in diagnosis of acute appendicitis in total of 310 patients with clinical diagnosis of acute appendicitis were included in this study. Patients were examined thoroughly, investigated and managed accordingly. The relevant data collected and analysed. Out of 310 patients, surgical procedures were performed in 22.90% of the patients. The overall negative appendicectomy rate was 9.86%, and the percentage of positive predictive value (PPV) for Alvarado score was 90.14%. Kohla et al[12] a total of 100 patients with acute lower abdominal pain suspecting acute appendicitis were included, examined clinically,and their modified Alvarado score was calculated. All specimens of appendectomies were sent to histopathological examination and then their results were compared with the results of modified Alvarado score.The results of this study showed that modified Alvarado score at the cutoff value of at least 7 has a sensitivity of 93.33%, specificity of 52.94%, accuracy of 84.42%, and negative appendectomy rate of 12.5%.The Alvarado score was a cheap, reliable, and reproducible diagnostic tool. When the score is high (≥7), there are strong indications for urgent surgery. When the score is low (<4), the diagnosis of appendicitis is very unlikely.

CONCLUSION

The diagnosis of acute appendicitis is primarily a clinical one that is based on proper history and repeated clinical examination. The Alvarado scoring system is a reliable and practicable diagnostic modality to increase the accuracy in diagnosis of acute appendicitis and thus to minimise unnecessary appendectomy In our study of 64 patients we found that high Alvarado score was indicative of acute appendicitis.

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