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A study to evaluate the effectiveness of Alvarado scoring system in diagnosis of acute appendicitis

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Abstract---Acute appendicitis stays a typical careful crisis all through the world. Regardless of the steadily developing headways in the field of diagnostics the recognizing acute appendicitis stays a mystery for the specialists all throughout the planet. Specialists utilize distinctive scoring frameworks and clinical models to diagnose acute appendicitis and reduction the negative appendectomy rates. The Alvarado scoring system (Alvarado 1989) which was adjusted by Kalan et al at 1994 is an easy to utilize and simple to apply scoring framework since it depends on history, clinical assessment and an essential lab examination.

Keywords---acute appendicitis, evaluate, effectiveness, scoring system.

Introduction

One of the most common acute abdominal emergencies is acute appendicitis but diagnosis is often challenging. In general population 6% to 7% will develop appendicitis during their lifetime, most commonly in the second decade.^[1,2] The examining surgeon must have high index of suspicion for identifying acute appendicitis for prompt treatment of this condition, thereby avoiding substantial morbidity (& even mortality) associated with perforation. Prevalence of appendicitis(lifetime) is 1 out of 7 people. Least expensive & least invasive method of identifying acute appendicitis is graded compression ultrasonography & its

sensitivity ranges from 78% to 83% whereas specificity ranges from 83% to 93% according to various studies [3]. Clinical judgement with aid of clinical scoring helps in making good diagnosis along with ultrasonography. So this study was conducted to study the effectiveness of Alvarado scoring system in identifying acute appendicitis.

Material and Methods

This study was conducted in Department of Surgery, Shyam Shah Medical College associated with Sanjay Gandhi Memorial Hospital Rewa (MP). Patients admitted in surgical ward of Department of Surgery SGMH, Rewa suggestive of acute appendicitis were study participants. Patients presenting with complaints of RLQ pain in abdomen with fever & nausea suggesting acute appendicitis, in emergency department were included in the study. Patients with pain > 5 days duration and appendicular lump/mass and age <12 years were excluded from the study. Study was conducted from Feb 2020 to July 2021 (18 months) with sample size of approximately 50 cases. Alvarado scoring system & ultrasonography for identifying acute appendicitis were tools included in the study.

Results

In the present study, 64% (36 patients) of the subjects were male & 36%(20 patients) were female. In this study minimum age was 15 years & maximum age was 82 years & average age was 30.92 years. 25 patients (44.64%) were in 15-24 age group, 11 patients (19.64%) were in 25-34, 11 patients (19.64%) were in 35-45 age group & 9 patients (16.08%) were >45 years. Patients having migratory pain were 47(83.92%), anorexia 31(55.3%), nausea/vomiting 35 (62.5%), rebound tenderness 26(46.4%), fever 26(46.4%), leucocytosis 53(94.64), diarrhoea 10(17.85%), constipation 05(8.9%), elevated neutrophil 52(92.8%), per rectal digital examination normal were 41(73.21%), tenderness in rectum 15(26.47%). People having AS of 5 are two (3.57%), 6 are eight (14.28%), 7 are twenty (35.71%), 8 are fifteen (26.78%), 9 are ten (17.85%), 10 are one (1.78%) [Table 1]. In the given table 2 total no. of cases who were tested positive & were diseased are 47, tested positive but not diseased was 1. Total patients who tested negative but diseased were 2 & who were tested negative but also not diseased were 6. So, from the given data we can calculate sensitivity of AS which comes out to be 95.9% & specificity will be 85.7%, PPV would be 97.9% & NPV would be 75% , (P-value, <0.0001, significant)

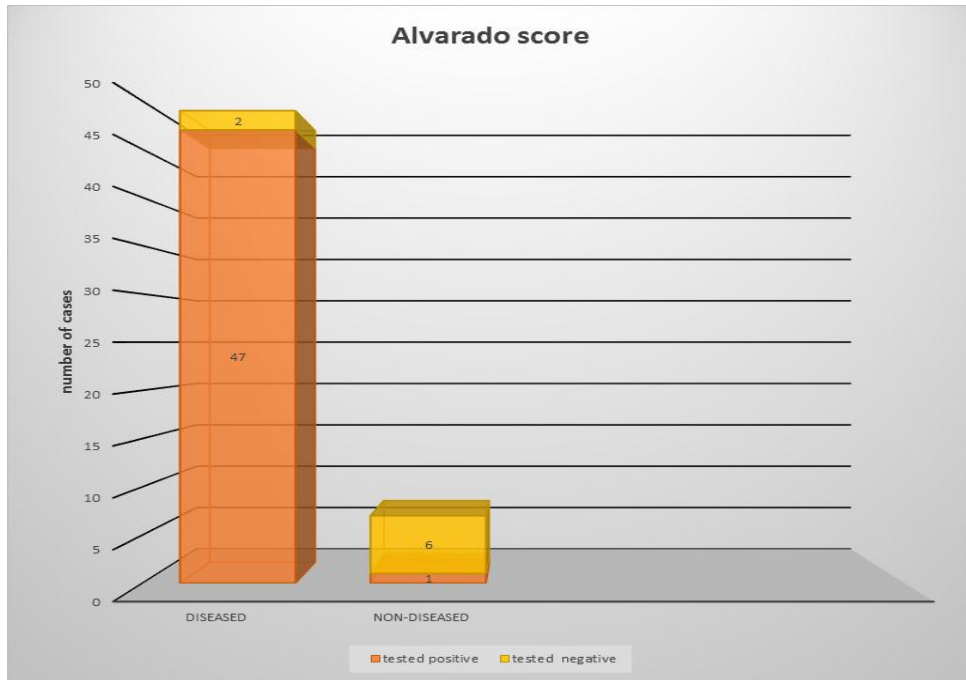
Table no. 1: Case distribution according to Alvarado Scoring

S no.	AS	Frequency	Percentage
1.	5	2	3.57
2.	6	8	14.28
3.	7	20	35.71
4.	8	15	26.78
5.	9	10	17.85
6.	10	1	1.78
7.	Total(n)	56	100%

Table no. 2: Alvarado Score

	Diseased	Non-diseased
Tested positive	47(TP)	1(FP)
Tested negative	2(FN)	6(TN)
Total(n)	49	7

Graph no. 1: Alvarado Score



Discussion

It is not possible to have a definitive diagnosis by gold standard (histopathology) pre-operatively, hence a simple test like Alvarado scoring system is performed which depends on certain variables of examination. Clinical scoring frameworks are acceptable supporting apparatus for distinguishing an acute appendicitis since they are basic, simple to utilize and non-intrusive to use in routine practice which require no extraordinary hardware. Generally, sensitivity of Alvarado scoring goes from 58.9% to 98.44%. In our preparation we found sensitivity 95.9% which was to the sensitivity detailed by Nishikant Gujar et al (2015) [7] and Kanumba et al (2011) [6] in their review which were 98.44% and 98.11%. Shirzad et al (2012) [6] viewed the sensitivity as 62.7% while Nan-Jundh et al (2014) [7] revealed something very similar to be 58.9%. The specificity of Alvarado scoring system is reported to range from 65.7% to 94.44% in various studies. We found the specificity to be 85.7% in this study. Our result was similar to the study by Shirzad Nasiri et al. (2012) [8] who found the specificity to be 65.7%. Nishikant Gujar et al. (2015) [7] & Kanumba et al (2011) [6] reported the same to be 94.44% & 90.4% respectively.

Conclusion

Acute appendicitis stays a typical careful crisis all through the world. Regardless of the steadily developing headways in the field of diagnostics the recognizing acute appendicitis stays a mystery for the specialists all throughout the planet. Specialists utilize distinctive scoring frameworks and clinical models to diagnose acute appendicitis and reduction the negative appendectomy rates. The Alvarado scoring system (Alvarado 1989) which was adjusted by Kalan et al at 1994 is an easy to utilize and simple to apply scoring framework since it depends on history, clinical assessment and an essential lab examination.

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