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Role of modified Alvarado score and ultrasonography for diagnosis of acute appendicitis

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Abstract

Acute appendicitis is the most widely surgical emergency a specialist runs over by and by. Yet, the finding of intense a ruptured appendix still speaks to a standout amongst the most troublesome issue in surgery. Several clinical scoring systems and diagnostic modalities are in use to diagnose acute appendicitis. The aim of this study is to compare reliability of Alvarado Score, a clinical scoring system and sonography of abdomen in diagnosis of acute appendicitis. One hundred and ten patients attended OPD and emergency with lower abdominal pain suggestive of acute appendicitis were included in the study. Results of diagnostic accuracy of Alvarado scoring and sonography of abdomen were analysed and compared. Though all the accuracies related to diagnosis of appendicitis of USG were better than that of Alvarado Score, since these were more or less comparable to USG. Thus Alvarado Score can be used in place of USG in case of non-availability of USG facilities to diagnose appendicitis in case of emergency.

Keywords: Ultrasonography, appendicitis, Alvarado score

Introduction

Intense a ruptured appendix is the most widely recognized careful crisis a specialist runs over practically speaking ^[1]. However, the conclusion of intense an infected appendix still speaks to a standout amongst the most troublesome issue in medical procedure. A few clinical scoring frameworks and symptomatic modalities are being used to analyse intense a ruptured appendix. The point of this examination is to look at dependability of Alvarado Score ^[2], a clinical scoring framework and sonography of stomach area in determination of intense an infected appendix. One hundred and ten patients went to OPD and crisis with lower stomach torment suggestive of intense a ruptured appendix were incorporated into the investigation ^[3]. Consequences of analytic precision of Alvarado scoring and sonography of guts were investigated and thought about. Despite the fact that every one of the correctnesses identified with analysis of an infected appendix of USG were superior to that of Alvarado Score, since these were pretty much practically identical to USG ^[4]. In this way Alvarado Score can be utilized instead of USG in the event of non-accessibility of USG offices to analyse an infected appendix if there should be an occurrence of crisis.

Materials and method

The present study was conducted in the Department of Surgery at the IMS & SUM Hospital, in collaboration with the Department of Radio diagnosis and Department of Pathology. All patients attending Emergency department and Surgical OPD of IMS & SUM Hospital, with acute pain in right lower abdomen or periumbilical region. The present study was a hospital based cross-sectional study. All patients with lower abdominal pain suggestive of acute appendicitis, diagnosed clinically and/or radiologically and is subjected to exploratory laparotomy. Patients who have an appendicular lump and cases of Interval Appendicectomy. Patients who were unable to comprehend interview questions. Patients who were not providing consent to participate in the study. Duration of this study was from June 2016 to July 2018.

Statistical Analysis

In the present study, 116 patients were approached for inclusion. As 6 patients refused participation in the study, 110 patients were interviewed.

The response rate for the present study was 94.8%. The demographic characteristics of the patients, clinical findings, diagnostic accuracy of the Alvarado score and USG, perioperative findings and histo-pathological findings will be discussed herewith.

Results

Table 1: Distribution of study participants by gender

Gender	Number	%
Male	48	43.6%
Female	62	56.4%
Total	110	100.0%
Male: Female	1.0: 1.29	

Table 2: Distribution of participants by nausea/vomiting

Nausea/Vomiting	Number	%
Present	74	67.2
Absent	36	32.8
Total	110	100

Table 3: Distribution of participants by right iliac fossa tenderness

RIF Tenderness	Number	%
Present	109	99.1
Absent	1	0.9
Total	110	100

Table 4: Distribution of participants by rebound tenderness

Rebound Tenderness	Number	%
Present	81	73.6
Absent	29	26.4
Total	110	100

Table 9: Comparison of USG and Alvarado score with perioperative findings

Diagnostic Tools	Diagnostic Accuracy	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Alvarado Score	79.09	78.6%	75%	97.6%	22.2%
USG	86.4%	88.2%	62.5%	96.8%	29.4%

Table 10: Comparison of USG and ALVARADO score accuracy with HPE findings

Diagnostic Tools	Diagnostic Accuracy	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value
Alvarado Score	75.5	78%	50%	94%	18.5%
USG	84.5%	89%	60%	95.7%	35.3%

Discussion

Most of the patients were in the age group 15-24 years (37.3%) Test of proportion showed that proportion of females (56.4%) was significantly higher than that of males (43.6%) 78.2% of the patients were having duration of symptoms ≥ 7 hours. 21.8% of the patients reported within 7 hours after the onset of symptoms. Proportion of patients with migratory pain (75.5%). Proportion of patients presented with anorexia (95.45%). Proportion of presence of nausea and vomiting (67.2%). In 99.1% of the cases had tender RIF. Proportion of presence of rebound tenderness (73.6%). 39% of the patients had increased temperature. Leukocytosis was found in 82.7% of the patients. In 67.2% of the cases left shift was present. The mean Alvarado score (mean \pm s.d.) of the patients was 7.21 ± 1.39 with range 3 - 9 and the median was 7. Proportion of patients with Alvarado score ≥ 7 (83%) In 84.5% of the cases USG detected appendicitis which was significantly higher. As per the perioperative finding 88.2% of the patients had inflamed appendix, appendicular lump was found in 4.5% cases and no abnormality was detected among 7.3% of the patients. Most of the appendix were retrocecal (40%) followed by preileal (29.1%). As per HPE 90.9% of the patients had

Table 5: Distribution of participants by increased temperature

Increased Temperature	Number	%
Present	43	39
Absent	67	61
Total	110	100

Table 6: Distribution of participants by leukocytosis

Leucocytosis	Number	%
Present	91	82.7
Absent	19	17.3
Total	110	100

Table 7: Distribution of participants by left shift

Left shift	Number	%
Present	74	67.2
Absent	36	32.8
Total	110	100

Table 8: Distribution of participants by Alvarado score

Alvarado score	Number	%
3	2	1.82
4	1	0.91
5	13	11.82
6	11	10
7	32	29.09
8	30	27.27
9	21	19.09
Total	110	100

Inflammation of appendix. Only 6(5.5%) patients had wound infection [5]. The mean duration of stay in hospital was 6.8 days. 94.5% were discharged within one week. In comparison to perioperative findings Alvarado Score could detect 73.6% of the appendicitis. In comparison to perioperative findings, USG could detect 81.8% of the appendicitis. Sensitivity of USG (89%) was higher than that of Alvarado Score (78%) but it was not significant.

Conclusion

The present investigation uncovered that the indicative exactness of Alvarado score and USG identified with analysis of an infected appendix were similar. In spite of the fact that the symptomatic exactness and affectability of USG was higher in contrast with Alvarado score, there was no critical distinction among the two modalities. In this manner, Alvarado score can be viewed as utilized instead of USG if there should arise an occurrence of its non-accessibility or in the event of any crisis to analyze intense an infected appendix.

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