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VALIDITY OF ALVARADO SCORING SYSTEM IN DIAGNOSIS OF ACUTE APPENDICITIS

ASGHAR ALI[1], ABDUR RAHMAN[2], FAZAL RAHIM[3]

1. Department of Surgery, DHQ Hospital Timergara, Lower Dir.
2. Department of Surgery, Peshawar Medical College, Peshawar.
3. Department of Pathology, DHQ Hospital Timergara, Lower Dir.

ABSTRACT

BACKGROUND: The first appendectomy was performed by Claudius Amyand in 1736 when he was operating on a boy for hernia and found appendix lying in hernial sac. Reginald Fitz introduced the word appendicitis in 1886 and before that it was called typhlitis or perityphlitis.Frederick Treves performed the 1st appendicle surgery in England for the new disease 'appendicitis' in 1887.

OBJECTIVE: To study the accuracy of modified Alvarado scorning system in diagnosis of acute appendicitis.

MATERIAL & METHODS: This descriptive cross sectional study was conducted at DHQ Hospital Timergara Dir lower from January 2015 to July 2015 to find out the accuracy of Alvarado Scoring system in the diagnoses of acute appendicitis. A total of 50 patients admitted in surgical ward from OPD and Casualty with suspected appendicitis were included in the study. Patients less than 7 years and patients with mass right iliac fossa were excluded. Every patient was evaluated with modified Alvarado scoring system on a standard Proforma. Patients with Alvarado score of ≥ 6 underwent appendectomy. The removed appendices were sent for histopathology to confirm or otherwise the provisional diagnosis of acute appendicitis and hence the accuracy of Alvarado scoring system.

RESULTS: Out of 50 patients, 20 were male &30 were female with a male to female ratio of 1:1.5. The mean age of the patients was 19.7 ± 9.6years. The mean Alvarado score was 7.92 ± 1.383. The Histopathology reports of the specimens of 37 patients were confirmative of acute appendicitis whereas the rest of the (13 patients) removed appendices were reported normal by histopathalogist. So the sensitivity is 74%.

CONCLUSION: Our study shows that Alvarado scoring system is a simple and quick tool in the evaluation and management of suspected cases of acute appendicitis. Its accuracy increases if used in patients above 14 years of age.

KEYWORD: Alvarado scoring system, Appendicitis, Accuracy.

INTRODUCATION

Acute appendicitis is the most common surgical emergency making about 35% of the surgical procedures performed for acute abdomen[1]. Theprevalence is approximately 1 in 7 and incidence is 1.5 to 1.9/1000 population[2-3]. The diagnosis of acute appendicitis is clinical and whether to operate or not is surgeon dependent.[4] Delayed diagnosis can lead to complications like peritonitis, septicemia and death, while removal of normal appendix has high morbidity as compared to appendectomy for acute appendicitis[5]. Certain investigations like ultrasound, computed tomography, C-reactive protein[6], peritoneal aspiration cytology[7] and laparoscopy may help in patients of equivocal clinical findings but they cannot be used routinely due to high cost, non availability of these diagnostic modalities and need for quick diagnosis and management of acute appendicitis[8]. Therefore a simple and easy protocol is necessary for the provisional diagnoses of acute appendicitis and the Alvarado scoring system is a cheap and quick tool, based on history, physical examination and simple laboratory investigations[9-10]. Definitive diagnosis

can only be obtained after surgery and histopathological examination of the specimen.

METHODOLOGY

This cross sectional study was conducted at DHQ Hospital Timergara Dir lower from January 2015 to July 2015 to find out the accuracy of Alvarado Scoring system in the diagnoses of acute appendicitis. A total of 50 patients both male and female ≥ 7 years of age admitted to surgical unit via OPD and casualty department were included in the study. All patients were evaluated by taking history, clinical examination and investigations. Patients with mass right iliac fossa were excluded from the study. Every patient was evaluated with modified Alvarado scoring system on a standard Proforma, Table-1. Patients having score ≥ 6 were operated and appendices were sent for histopathology. After receiving the histo-pathology reports data was entered and analyzed in Microsoft excel 2007.

Table-1 : Alvarado Scoring system

MANTRELS	Mnemonic	Value
Symptoms	Migratory pain	1
	Anorexia	1
	Nausea-Vomiting	1
Signs	Tenderness in RLQ	1
	Rebound Tenderness	2
	Elevation of Temperature > 37.3 ċ	1
laboratory	Leucocytosis	2
	Shift to Left	1
Total Score		10

RESULTS

There were a total of 50 patients with mean age of 19.7 ± 9.6 years, mode 20 years and median 18 years. The mean Alvarado score was 7.92 ± 1.383, mode 9 and median 8. The Mean TLC was 11770 ± 4228.2/mm^{3}. The tabulated and graphical presentations are shown below.

Table: 2. Age Distribution of Patients, n=50

Age Range	Number of Patient	Percentage
7-14 years	16	32%
15-25 years	27	54%
26-35 years	4	8%
36-45 years	2	4%
46-55 years	0	0%
56-60 years	1	2%

Table-3: Sex Distribution n=50

SEX	No. Of Patient	%age
Male	20	40
Female	30	60
Ratio. 1 : 1.5		

Table-4: Alvarado Score

Score	Number of Patient	Percentage
6	10	20%
7	11	22%
8	10	20%
9	11	22%
10	8	16%

Fig-1: Signs Symptoms of Alvarado Scoring system.

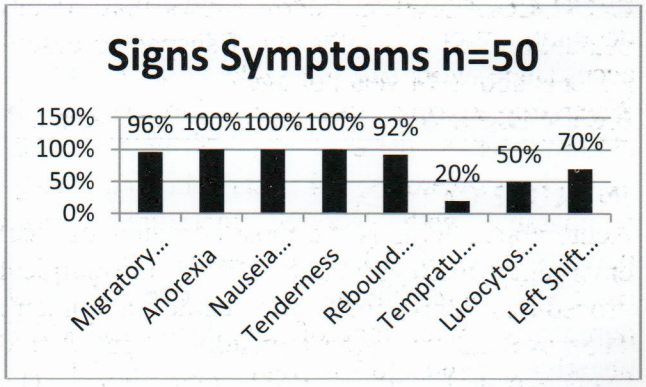
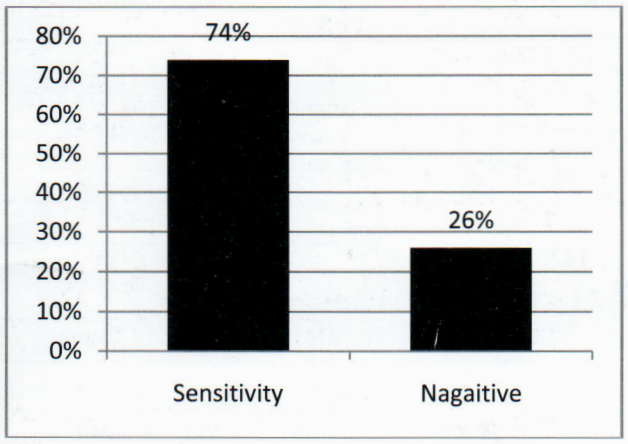


Fig-2: Sensitivity of Alvarado Scoring.



DISCUSSION

The diagnosis of acute appendicitis is almost always clinical and whether to operate or not is surgeon dependent.[4] Literature shows that if negative appendectomy rate is < 10 – 15 %, it means that the surgeon has conservative approach and there is greater risk of complications[11] Removal of normal appendix in 20 - 40% of case has been reported in literature[12]. Mean age in our study of 19.7 years, with male to female ratio of 1:1.5 is comparable with figures shown in literature as 20.2 years , ratio 1:1.4[13]. The overall sensitivity in our study (74%)is lower than that of Ohle et al 81%[14.] and higher than that of satyajeet et al 71%,[15] Emmanuel et al 66.9%[16]. Negative appendectomy rate of 26% in our study is in accordance with that of Ohle et al (24%)[18]. Alvarado scoring system is inconsistent in children as 8 patients out 13 with normal appendices were ≤ 14 years in our study, comparable with reported literature.[14] Eight patients out of 13 with normal appendices (61.53%) were having score of 6 which is comparable with that of satyajeet et al (65% negative appendectomies)[15].

In our study, the commonest sign on examination was tenderness in the right iliac fossa, which was present in 100%, similar to study of adesunkanmi et al [17]. The rebound tenderness in the right iliac fossa was present in 92% cases ,which matches with that of Bhopal et al[18]. In our study, the mean leukocytes count was 11770/cmm, which is comparable with that of Groonros et al[19] and Thompson et al[10]. The migratory pain starting in the periumblical regions and shifting to the right iliac fossa was present in 96% of cases, which is higher than that of Hardin et al [20].

CONCLUSION

Our study shows that Alvarado scoring system is a simple and quick tool in the evaluation and management of acute appendicitis. It is more useful if used in patients above 14 years of age. Alvarado score of ≥ 7 is highly diagnostic of acute appendicitis and patients with score of ≤ 6 can be safely observed.

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CORRESPONDENCE ADDRESS

Name: Dr. Asghar Ali
Address: Surgical Specialist DHQ Hospital, Timergara, Lower Dir.
Cell No: 03369972516
Email: lapsurgasghardr78@gmail.com