

**Evaluation of Modified Alvarado Score in Diagnosis of Acute Appendicitis at M.G Hospital Bhilwara Rajasthan**H.S.Sahwal<sup>1</sup>, Anand Agarwal<sup>2</sup>

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**Correspondence Author:** Anand Agarwal, Department of surgery, M.G. Hospital, Bhilwara, Rajasthan**Type of Publication:** Original Research Paper**Conflicts of Interest:** Nil**Abstract**

**Background-** The diagnosis of acute appendicitis is essentially clinical; however a decision to operate based on clinical suspicion alone can lead to removal of a normal appendix in 15-30% cases.

**Methods-** A 50 consecutive patients suspected of acute appendicitis who were admitted in department of surgery, M.G. Hospital, Bhilwara, Rajasthan. They were prospectively evaluated using the modified Alvarado scoring (MAS) to determine whether or not they had acute appendicitis.

**Result -** In present study, out of total 50 patients 38(76%) were have MAS score 7-9, 22% were have 5-6 and 2% have MAS score 1-4.

**Conclusion-** MAS score in patients suspected to have acute appendicitis provides a high degree of diagnostic accuracy.

**Keywords-** Modified Alvarado Score (MAS), acute appendicitis, Patients.

**Introduction**

Acute appendicitis is the most common surgically correctable cause of abdominal pain, the diagnosis of which remains difficult in many instances. Some of the signs and symptoms can be subtle to both the clinician and the patient and may not be present in all instances. Arriving at the correct diagnosis is essential, however, a delay may allow progression to perforation and significantly increased morbidity and mortality.

Incorrectly diagnosing a patient with appendicitis although not catastrophic often subjects the patient to an unnecessary operation<sup>1-3</sup>

The diagnosis of acute appendicitis is essentially clinical; however a decision to operate based on clinical suspicion alone can lead to removal of a normal appendix in 15-30% cases. The premise that it is better to remove a normal appendix than to delay diagnosis doesn't stand up to close scrutiny, particularly in the elderly. A number of clinical and laboratory based scoring systems have been devised to assist diagnosis. The most commonly used is the Alvarado score and equally its modifications<sup>4</sup>.

**Material and Methods**

**Study design:** Hospital based prospective study.

**Study duration:** 18 months.

**Study place:** Dept. of Surgery, M.G. Hospital, Bhilwara

**Study population:** patients presenting with pain in the right lower quadrant of Abdomen, lasting fewer than 7 days who after clinical examination will be provisionally diagnosed to have acute appendicitis .

**Sample size:** 50 patients reporting to the Surgery dept. within study duration and eligible as per inclusion criteria will be included in the study.

**Sampling Method:** Convenience sampling

**Inclusion Criteria:**

Patients with provisional clinical diagnosis of acute appendicitis

**Exclusion Criteria:**

1. Patients of age less than or equal to 12 years
2. Patients with generalised peritonitis due to appendicular perforation
3. Patients with appendicular mass or abscess

**Data Collection:**

Suspect acute appendicitis who were admitted, investigated and treated were taken for the study. After detailed examination and investigations a modified Alvarado score was applied to each case.

**Modified Alvarado Score**

This consists of three symptoms, three sign and a laboratory finding as described by Alvarado and later modified by Kalan et al<sup>5</sup>.

**Data Analysis:**

To collect required information from eligible patients a pre-structured pre-tested Proforma will be used. For data analysis Microsoft excel and statistical software SPSS will be used and data will be analyzed with the help of frequencies, figures, proportions, measures of central tendency, appropriate statistical test.

**Observations**

The present study was undertaken to evaluation of modified alvarado score for the diagnosis of acute appendicitis at Dept. of general Surgery, M.G.Hospital, Bhilwara. This study was conducted on total 50 number of patients.

Table-1: Distribution of cases according to Age (N=100 cases)

Age group (years)	No.	Percentage
13-20 years	9	18%
21-30 years	15	30%
31-40 years	13	26%
41-50 years	7	14%
51-60 years	5	10%
>60 years	1	2%

Total	50	100%
Means age ( years)	30.20	
SD	11.57	

In present study, maximum 30% patients belonged to age group was 21-30 years followed by 13(26%) in 31-40 age group, 1 (2%)cases in >60yrs age group.

Table-2: Distribution of cases according to Sex (N=50 cases)

Sex	No.	Percentage
Male	40	80%
Female	10	20%
Total		

Out of 50 patients 80% were male and 20% were female.

Table-3: Distribution of cases according to Modified Alvarado Scoring (N=50 cases)

Modified Alvarado Scoring(MAS)	No.	Percentage
1-4	2	2%
5-6	11	22%
7-9	38	76%

In present study, out of total 100 patients 38(76%) were have MAS score 7-9, 22% were have 5-6 and 2% have MAS score 1-4.

**Discussion**

In present study, maximum 30% patients belonged to age group was 21-30 years followed by 13(26%) in 31-40 age group, 1 (2%)cases in >60yrs age group.

Similar study has been done by Harsha et al.<sup>6</sup> In their study maximum incidence of acute appendicitis was found in the age group of 21 to 30 years , while Talukder et al<sup>7</sup> showed high incidence in third decade .

In present study, out of total 50 patients 40(80%) were male and 10 (20%) were from urban area. The study conducted by Harsha et al<sup>6</sup> was found same result.

In present study, out of total 50 patients 48(96%) were presenting with anorexia, 94% presenting with Migration of pain to right iliac fossa and 88 % presenting with nausea and vomiting.

Vandakudri AB et al<sup>8</sup> was observed that the predominant symptom was anorexia (71.7%), the next common symptom being nausea/ vomiting (63.3%) and migration of pain to right iliac fossa (53.3%).

Appendicitis needs to be considered in the differential diagnosis of almost every patient with acute abdominal pain<sup>9</sup>. Early diagnosis remains the most important goal in these patients and is made in most cases based only on history and clinical examination. The typical presentation begins with periumbilical pain due to irritation of visceral nerves. Followed by anorexia and nausea. The pain then localizes to right lower quadrant as inflammatory process involves parietal peritoneum overlying appendix. Fever ensues, followed by development of leukocytosis.

In present study, out of total 50 patients 48(96%) were presenting with Tenderness in right iliac fossa, 43% presenting with Rebound tenderness and 86 % presenting with Elevated temperature >37deg C.

Vandakudri AB et al<sup>8</sup> was observed that The predominant sign was tenderness over RIF (75.8%). The next common sign was elevated temperature >37.3°C (68.3%) and rebound tenderness over RIF (46.7%).

In present study, out of total 50 patients 42(84%) were present with leukocytosis. Similar study was done by Thabit et al<sup>10</sup>. In his study 87% were present with leukocytosis.

In present study, out of total 50 patients 38(76%) were have MAS score 7-9, 22% were have 5-6 and 2% have MAS score 1-4. Similar result were observed by Vandakudri AB et al<sup>8</sup>.

Modified Alvarado described a scoring system in 1986 which was later modified by kalan et al<sup>10</sup> to modified

Alvarado score. The scoring system involves following components with a total score of 9. A score of 7 or more is considered high probability for appendicitis.

### Conclusion

MAS score in patients suspected to have acute appendicitis provides a high degree of diagnostic accuracy.

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