ORIGINAL ARTICLE

ACUTE APPENDICITIS: EXPERIENCE IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objectives: To study the patients' characteristics and predominant clinical features in patients with acute appendicitis in a teaching hospital.

Study design: A cohort study.

Time & Place: Surgical department, Khyber Teaching Hospital Peshawar (Pakistan), from August 2005 to August 2006.

Sampling: Convenient sampling.

Patients & Methods: A total of 72 patients with established diagnosis of acute appendicitis were included in the study. The age range of the patients was from 11 years to 57 years. Relevant information was recorded from patients and treatment chart of the patients on a questionnaire designed in accordance with the objectives of the study.

Results: Out of a total of 72 patients. 46 (63.89%) patients were males and 26 (36.11%) were females, with a male to female ratio of 1.7:1. Chief complaints were: colicky abdominal pain (91.66), nausea and vomiting (73.61%), anorexia (76.38) and fever (59.12%). On examination the findings recorded were: abdominal tenderness (83.33), rebound tenderness (75), pyrexia low grade (59.12), pulse rate more than 80(54.16), guarding (58.33), positive rovising sign (43.05), positive psoas sign (13.88), and positive obturator sign (8.33). The Alvarado score (AS) was studied in all patients to support the diagnosis. Out of total, 52.77% had AS<4 (Group III), 40.25% had AS: 5-7(Group II) and 6.94% with AS>7/10 (Group I). We observed that acute appendicitis is more commonly seen in the upper social class people (62.5%) in our setup.

Conclusion: Acute appendicitis was more commonly observed in younger age. The classical signs of the disease are not always present, however, the scoring systems (like Alvarado scoring system) and laboratory investigations improve the diagnostic accuracy.

Key words: Acute appendicitis; Diagnosis; Alvarado scoring system.

INTRODUCTION

Appendicitis is the most common acute surgical condition of the abdomen.[1] Approximately 7 percent of the population will have appendicitis in their lifetime,[2] with the peak incidence occurring between the ages of 10 and 30 years.[3] Despite technologic advances, the diagnosis of appendicitis is still based primarily on the patient's history and the physical examination. Prompt diagnosis and surgical referral may reduce the risk of perforation and prevent complications.[4]

Obstruction of the lumen causing distension of the appendix due to accumulated intraluminal fluid is the primary cause of appendicitis. Ineffective lymphatic and venous drainage allows bacterial invasion of the appendiceal wall and, in advanced cases, perforation and spillage of pus into the peritoneal cavity.[5]

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According to US Census Bureau, International Data Base repot 2004, the incidence of acute appendicitis in Pakistan and other countries of South Asia is given in Table I.[6]

Table I: Acute Appendicitis in Southern Asia (Extrapolated Statistics)[6]

Country	Extrapolated incidence	Population estimates used
Afghanistan	71,284	28,513,677
Bangladesh	353,351	141,340,476
Bhutan	5,463	2,185,569
India	2,662,676	1,065,070,60
Pakistan	**397,990**	**159,196,336**
Sri lanka	49,762	19,905,165

Present study was designed to determine the characteristics of the patients with acute appendicitis in a hospital-based study.

METHODS

A total of 72 consecutive patients with suspected acute appendicitis admitted in surgical department, Khyber Teaching Hospital Peshawar, during the period from August 2005 to august 2006 were included in the study.

A detailed history including the site of pain, its onset, character, migration, radiation, aggravating and relieving factors and any associated symptoms like nausea, vomiting, fever etc was recorded from all patients. The clinical examination included general physical examination, abdominal examination and pelvic examination. Clinical examination also included the psoase sign (fig 1) and obtuarator sign (fig 2).

Laboratory investigations included, total leukocyte count, differential leukocyte count and urine examination. Abdominal ultrasonography was performed when required. Prompt surgical intervention was done when the diagnosis of acute appendicitis was established.

Patients were given specific scores according to the variables of Alvarado scoring system [7] (Table I) and then divided into 3 groups. Group 1 patients (score $\geq$ 7) underwent surgery, Group 2 patients (score 5-6) were admitted for observation and Group 3 patients (score$\leq$4) were discharged home [8].

In the present study the socioeconomic status of the respondents has been defined on the bases of per capita income [9].

FIGURE 1. The psoas sign. Pain on passive extension of the right thigh. Patient lies on left side. Examiner extends patient's right thigh while applying counter resistance to the right hip. Source: D. MIKE HARDIN, JR., M.D, Texas A&M University Health Science Center, Temple, Texas, USA)

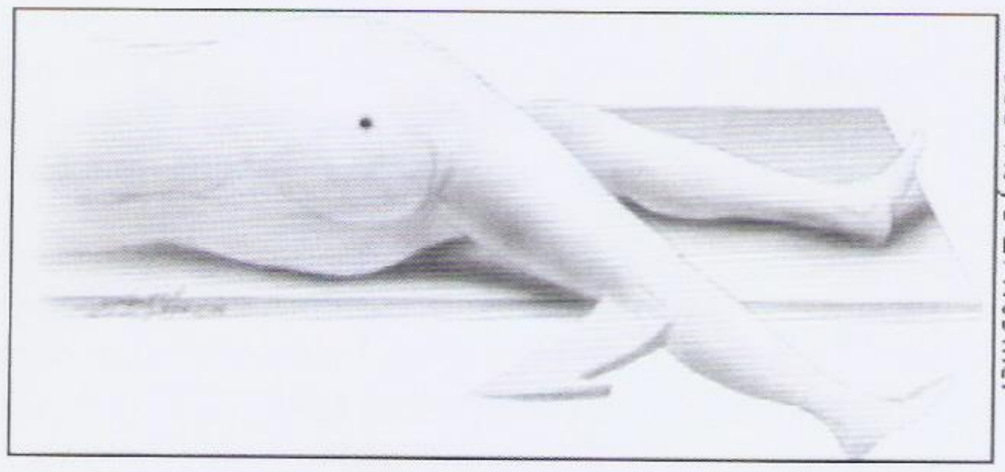

FIGURE 2. The obturator sign. Pain on passive internal rotation of the flexed thigh. Examiner moves lower leg laterally while applying resistance to the lateral side of the knee (asterisk) resulting in internal rotation of the femur. Source: D. MIKE HARDIN, JR., M.D, Texas A&M University Health Science Center, Temple, Texas, USA)

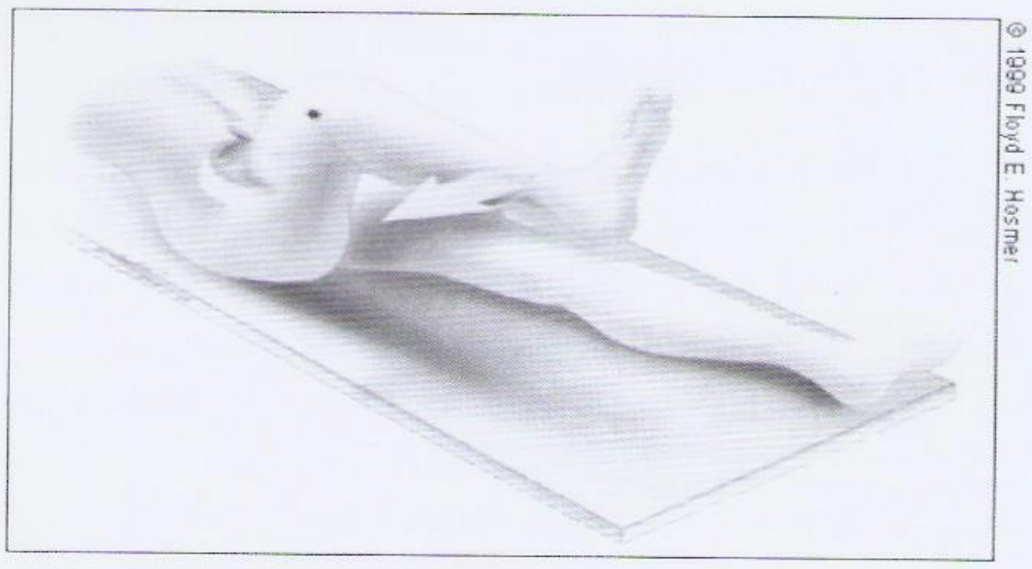

Table 2: MANTRELS or Alvarado scoring system for grading severity of acute appendicitis.[7]

Characteristic	Score
M = migration of pain to the RLQ*	1
A = anorexia	1
N = nausea and vomiting	1
T = tenderness in RLQ	2
R = rebound pain	1
E = elevated temperature	1
L = leukocytosis	2
S = shift of WBC to the left	1
Total	10

*RLQ right lower quadrant

RESULTS

A total of 72 patients with established diagnosis of acute appendicitis were selected. The mean age of the patients was 25 years with a range of 11 to 57 years. 63.38% of the total patients were males and 36.11% were females, with a male to female ratio of 1.7: 1. Demographic data is given in Table 3. Chief complaints were colicky abdominal pain (91.66%), nausea and vomiting (73.61%), anorexia (76.38%) and fever (59.12%). On examination the abdominal tenderness (83.33%) was present in majority of the patients. Other findings were rebound tenderness (75%), pyrexia low grade (59.12%), pulse arte more than 80(54.16%) and guarding (58.33). Rovising sign was positive in 43.05%, psoas sign in 13.88% and obturator sign in 8.33% of the patients. (Table 4)

Regarding Alvarado score, out of a total number of 72 patients, 52.77% had AS<4 (Group III), 40.25% had AS: 5-7(Group II) and 6.94% with AS>7/10 (Group I). (Table IV).

Table 3: Demographic Data of patients. (Total number of patients: 72)

Age range	Number of patients (% of total)
11-20 years	9 (12.5)
20-30 years	23 (45.83)
30-50 years	26 (36.11)
More than 50 years	4 (5.55)
M:F Ratio	**46:26 (63.9:36.1)**
Social status	
Upper class with income > 20000/month	45(62.51)
Middle class with income 5000-20000/month	22(30.55)
Lower class with income < 5000/month	05(6.94)

Table 4: Clinical features recorded (N=72)

Clinical features	Number of patients (%)
1. Chief complaints/symptoms	
Colicky abdominal pain radiating to right iliac fosse	66 (91.66)
Nausea and vomiting	53 (73.61)
Anorexia	49 (68.05)
Pyrexia	43 (59.12)
2. Positive signs/ findings	
Abdominal tenderness/acute abdomen	60(83.33)
Rebound tenderness	54(75)
Pyrexia	43(59.12)
Guarding	42(58.33)
Pointing sign	37(51.38)
Rovising sign	31(43.05)
Psoas sign	10(13.88)
Obturator sign	06(8.33)

Table 5: Alvarado scoring of patients with acute appendicitis. (N=72)

Group	Alvarado score	Number of patients (%) Percentage of total
Group I	>7	29 (40.27)
Group II	5-6	38 (52.77)
Group III	<4	5 (6.94)

DISCUSSION

Incidence of appendicitis gradually rises from birth, peaks in the late teen years, and gradually declines in the geriatric years. In present study the age range of the patients was from 11 years to 57 years. Mean age recorded was 25 years. Although rare, neonatal and even prenatal appendicitis has been reported. The emergency physician must maintain a high index of suspicion in all age groups.[10]

The incidence of appendicitis has been reported to be approximately 1.4 times greater in men than in women. The incidence of primary appendectomy is approximately equal in both sexes. Our study correlates with the available data as we observed a male to female ratio of 1.7: 1.[11]

We observed that colicky abdominal pain (91.66%) as hallmark of the disease. Other prevalent findings recorded were: abdominal tenderness, rebound tenderness and low grade pyrexia in that order. A pulse rate more than 80 was noted in 54.16% of the patients. It is probably due to pyrexia and the pain. Guarding was present in almost half of the patients (58.33%); positive rovising sign (43.05%) was a more significant finding as compared to a positive psoas or obturator signs (13.88 and 8.33% respectively). Other studies also show that abdominal pain is the most common symptom of appendicitis. Anorexia, nausea and vomiting are symptoms that are commonly associated with acute appendicitis. The classic history of pain beginning in the periumbilical region and migrating to the right lower quadrant has been described to occur in only 50 percent of patients, this was in contrast to our study which shows a higher incidence (91.66%) in our population.[1] Duration of symptoms exceeding 24 to 36 hours is uncommon in nonperforated appendicitis[12-14].

Out of total, 52.77% had AS<4 (Group III), who were discharged usually, 40.25% had a score of 5-7(Group II) and were admitted for observation and only 6.94% patients with a score >7/10 (Group I) underwent surgery. We find this scoring system as an easy, simple and cheap complementary aid for supporting the diagnosis of acute appendicitis especially for junior surgeons, to screen out patients for disposal. [8] The use of this scoring system may reduce the number of unnecessary appendectomies.

CONCLUSION

Acute appendicitis was more commonly observed in younger age. Prompt diagnosis of appendicitis with the help of laid down criteria ensures timely treatment and prevents complications. As abdominal pain is the most common presenting symptom in outpatient care, family physicians serve an important role in the diagnosis of appendicitis.

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