Acute Appendicitis: Faults and Fallacies in Clinical Diagnosis

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Acute appendicitis is the common surgical condition of acute abdomen. About one percent of all surgical operation is appendicectomy. Despite the development of accessible laboratory tests and imaging procedures, the diagnosis of appendicitis rests upon the clinical surgery. Clinical feature and special investigations of acute appendicitis are non-specific and the differential diagnosis is long indead. Occasionally our surgeons have to remove normal appendix or find some other pathology on exploration. In some cases histopathological diagnosis does not correlate with clinical and pre-operative diagnosis. To correlate between the real acute inflammatory condition of the appendix and failure of the real clinical diagnosis and to exclude some fallacies we studied 100 cases of acute appendicitis, in Rangpur Medical College Hospital operated January 1998 to July 1998. of which 76 cases were diagnosed as acute appendicitis histopathology while 24 cases proved to have diagnostic error. Among the histologically confirmed cases of acute appendicits male to female ratio was 1.8:1. Maximum incidence was found to be in the second decade. Patients' age ranged from 10 to 48 years. Maximum patients came from middle class of socioeconomic condition. All patients complained of sudden onset of pain abdomen and majority complained of anorexia. Total count (TC) of WBC ranged from 5,000 to 15,000/cmm. Total count of WBC was found to be greater than 10,000/cmm in 70 (92.1%) cases and neutrophilia was found in 65 (85.5%) cases. Urine analysis did not show any significant finding. Plane X-Ray abdomen showed no suspected faecoliths or renal calculi. Ten (13.2%) patients had history of previous attack of similar type of pain. Forteen (18.4%) patients had features of intestinal obstruction. The time of operation from admission varied from 2 hours to 24 hours. All patients were operated under general anaesthesia. Few patients complained of cough and upper respiratory tract infection. Infection developed in 10 (13.2%) cases. Post-operative antibiotic were used in all cases. The rate of infection was high in those units who did not practice per-operative antibiotic therapy. Duration of hospital stay ranged from 3 to 10 days. False diagnostic rate was 24%. The causes of false diagnosis for acute appendicitis were normal appendix (12), ruptured ovarian cyst (1), twisted ovarian cyst (2), enteric ileal perforation (5) and fibrosed appendix (4). Considering our faults in the clinical diagnosis of acute appendicitis, there should be further stress in careful history taking and clinical examination.

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Key words: Acute appendicitis, Diagnosis

Introduction

Abdomen is compared with "Magic Box" and acute abdomen is still a mystery to the clinicians. Acute appendicitis is the common surgical condition of acute abdomen.[1] Appendicectomy represent about one percent of all surgical operation.[2] Despite the development of accessible laboratory tests and imaging procedures, the diagnosis of appendicitis rests upon the clinical surgery, as the clinical feature and special investigations are all non-specific and the differential diagnosis is long indead.

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Treatment of acute appendicitis is appendisectomy. But many tims appendix is found to be normal on exploration. Since ruptured appendix carried a morbidity rate greater than that of negative exploration, laparotomy have been accepted by many investigators.[2,3]

Appendicitis is also common surgical condition in Bangladesh and appendisectomy is one of the most commonly performed emergency operations. Occasionally our surgeons have to remove normal appendix or find some other pathology on exploration. In some cases histopathological diagnosis does not correlate with clinical and pre-operative diagnosis. The aims of the present study was to correlate between the real acute inflammatory condition of the appendix and failure of the real clinical diagnosis and exclude some fallacies and thus might be reduced false diagnosis of acute appendicitis to some extent.

Methods

Patients presented with clinical signs and symptoms of acute appendicitis admitted in Rangpur Medical College Hospital from January 1998 to July 1998 were included in this study. Diagnosis was made considering the history, clinical examination, laboratory investigations of total and differential count of WBC, plane X-Ray of abdomen, routine examination of urine, per-operative findings and histopathological examination. A standard protocol form was completed in each case. Patients' age, sex, religion, occupation, duration of symptoms and signs, operative findings, laboratory investigations and biopsy reports were recorded in the data sheet forms. These data were analysed by computer program SPSS.

Results

A total of 100 cases were found in this study for analysis of which 76 cases were diagnosed as acute appendicitis histopathology while 24 cases proved to have diagnostic error. First we studied cases with positive diagnosis of acute appendicitis. Among the true cases of acute appendicitis male patients were 49 (64.5%) and female patients were 27 (35.5%). The male to female ratio was 1.8:1.

Distribution of patients in different age groups is shown in the table I. Maximum incidence was found to be in the second decade. Patients' age ranged from 10 to 48 years.

Table I: Age incidence of patients with acute appendicitis

Age group in year	Number	%
≤10	01	1.3
11-20	32	42.1
21-30	26	34.2
31-40	16	21.1
41-50	01	1.3
>50	0	0

Maximum patients came from middle class of socioeconomic condition (fig. 1).

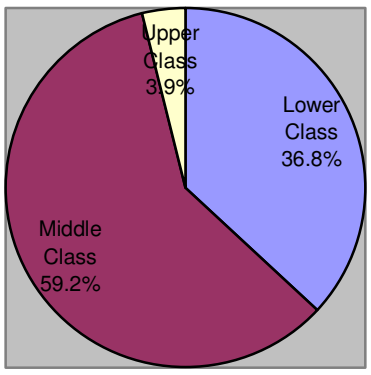

Figure 1. Socioeconomic status of patients with acute appendicitis (n=76)

Patients' clinical features are presented in the table II. All patients complained of sudden onset of pain abdomen and majority complained of anorexia.

Table II: Clinical features of patients with acute appendicitis

Symptoms	Number of patients	Percentage
Pain		
Typical	70	92.1
Atypical	6	8.0
Nausea	68	89.5
Vomiting	65	85.5
Anorexia	62	81.6
Fever	69	90.8
Bowel Function:		
Diarrhoea	3	4.0
Constipation	2	2.6

Findings of physical signs are shown in the table III. Findings were confirmed by leucocyte count to support clinical diagnosis. Total count (TC) of WBC ranged from 5,000 to 15,000/cmm. Total count of WBC was found to be greater than 10,000/cmm in 70 (92.1%) cases and neutrophilia was found in 65 (85.5%) cases. Urine analysis did not show any significant finding though it was done in every cases to exclude urinary tract problem. Similarly plane X-Ray abdomen was done and suspected faecoliths or renal calculi were not found in any case.

Table III: Findings of physical signs of patients with acute appendicitis

Signs	Number of Patients	Percentage
General Examination:		
Dehydration	60	79.0%
Pulse above 90/min	63	82.9
Temperature above 99°F	68	89.5
Abdominal Examination:		
Rigidity	70	92.1
McBurney's Point tenderness	70	92.1
Rovsing's sign	67	88.2
Psoas test	65	85.5
Rebound tenderness	68	90.0
Obturator test	10	13.2
Per-rectal examination:		
Tenderness	16	21.1

Ten (13.2%) patients had history of previous attack of similar type of pain. Fourteen (18.4%) patients had features of intestinal obstruction. The time of operation from admission varied from 2 hours to 24 hours. All patients were operated under general anaesthesia. After operation, appendices were examined macroscopically and sent for histopathological examination in the laboratory. Post-operative progress was noted carefully. Few patients complained of cough and upper respiratory tract infection. Infection developed in 10 (13.2%) cases. Post-operative antibiotic were used in all cases. The rate of infection was high in those units who did not practice per-operative antibiotic therapy. Duration of hospital stay ranged from 3 to 10 days. The period of short stay was due to acute crisis of bed in the hospital. Correct diagnosis was made in case of 76 (76%) that indicated false diagnosis rate is 24%. Causes of false diagnosis is shown in the table IV.

Table IV: Causes of false diagnosis in cases of acute appendicitis

Types of false diagnosis	Number of cases
Normal appendix	12
Ruptured ovarian cyst	1
Twisted ovarian cyst	2
Enteric ileal perforation	5
Fibrosed appendix	4

Discussion

Acute appendicitis is the commonest surgical emergency in our hospital. We depend on clinical and laboratory findings for the decision to come to a final diagnosis. There are other studies carried out on appendicitis. We like to compare those studies with our present study.

Sasso et al found low incidence of acute appendicitis in the first and maximum in the second decade.[4] While in the study series of Chee et al, Rakiuddin et al, Shahid et al maximum age incidence was in the third

decade.[5-9] According to text book of Baily and love maximum age incidence in between 20 and 30 years.[10]

In the present series male to female ratio was found to be 1.8:1 but according to text book it is 2:1.[10] Cheet et al and Rakibuddin et al found it 1.2:1 and 1.9:1, respectively.[5,6] Majority of the patient came from middle class. The cases in higher class groups were very few in this series. The reason may be that patients from the solvent class are reluctant to accept the poor standard service of government hospitals. It is related to the higher incidence of acute appendicitis in the upper class.

In our study series pain abdomen was the symptom present in all cases. In addition, anorexia and nausea were present in majority of cases. There were 3 cases who complained of loose motion. There was no complains of dysurea. Presenting symptoms of cases are similar to other studies.[6,7,9-12]

Temperature in right iliac fossa was present in every case. Tenderness was >98^{o}F in 90.8% of cases. Patients with lump and abscess formation were excluded from the study. Dehydration of mild type was present in most cases.

Total WBC count <10,000/cmm were found to 86%, 55%, 56.4%, 16.0% and >10,000/cmm was found to be 14.0%, 45%, 43.6% and 84.0% in the series of Rakibuddin (1983), Arnbjornesson (1985), Shahid (1989), Shoaib (1993), respectively. In our study it was 7.9% and 92%, respectively.[6,7,9,10] Diagnostic error in our cases was found to be 24%. But in the series of Silberman (1981), Rakibuddin (1983), Mahbub (1984) and Shoaib (1993) were 14.7%, 9.1%, 5.0% and 20.0%, respectively.[1,6,13,10]

Diagnostic accuracy in male was 79%, 94%, 93% in the series of Anderson, Rakibuddin and Shoaib, respectively.[14,6,10] In cases of females the figures were 60%, 85%, 60%, respectively. In our series it was 75.4% and 77.1%, respectively. The higher errors in females may be due to the gynaecological disorders which affect them. A negative appendisectomy rate from 15 to 30% is expected by surgery all over the world.

Gynaecological disorders (20.0-20.4%), mesenteric adenitis(12-30%), perforation of duodenal ulcer (50%), ileal perforation (5%), caecal perforation (5%), fibrosed appendix (10%) were the causes of errors in diagnosis in the other study.[6,1,13,10] In our study cases of error were gynaecological disorders (12.5%), ileal perforation (20.8%) and fibrosed appendix (50%) and unknown (16.7%).

Considering our faults in the clinical diagnosis of acute appendicitis, there should be further stress in careful history taking and clinical examination.

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