

ORIGINAL ARTICLE

ACUTE ABDOMEN IN ADULTS: A TWO YEAR EXPERIENCE IN MEKELLE, ETHIOPIA.

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ABSTRACT

Background: The term acute abdomen denotes any sudden spontaneous non traumatic disorder whose main manifestation is in the abdominal area. It is one of the most commonly encountered emergencies in the practice of general surgery but there is no much study regarding the magnitude and pattern in Ethiopia and in the study area in particular.

Objective: The study was aimed at assessing the causes, pattern and outcomes of surgical regimen of acute abdomen in the study area.

Methods: This is a descriptive retrospective study conducted in all adult patients with acute abdomen admitted in Mekelle hospital from Sept, 2008 to August, 2010. Patient demographics, clinical features, white cell count levels, operative findings and outcomes were adequately recorded. Adequate recording has been maintained in the hospital. The source and the study groups (N-299) were patients of adult age categories.

Results: A total of 2628 surgical procedures were performed during the study period. Of these, 299 cases were surgical emergency conditions for acute abdomen accounting for (11.4%) of all surgeries. During the study period, there were 989 adult surgical emergency procedures of which 299 (30.2%) cases were laparotomies for acute abdomen. The age ranged from 15 years to 95 years (mean=31.5years). The male to female ratio was (M: F; 4.1:1). In this series, the most common symptoms were abdominal pain, vomiting and abdominal distention accounting for 299 (100.0%), 149 (49.8%) and 38 (16.4%) respectively. The frequent clinical signs were tenderness, localized guarding and rebound tenderness accounting for 287 (96.0%), 269 (90.0%) and 139 (46.4%) respectively. Acute abdomen was most common between 20-29 years of age at a rate of 96 (32.1%) with male 74 (24.7%) preponderance. Acute appendicitis was the leading cause of acute abdomen accounting for 159 (53.2%) followed by small bowel obstruction 48 (16.0%), sigmoid volvulus 38 (12.7%) and PPUD 13 (4.3%). Of the surgically treated patients for acute abdomen 92 (30.8%) had post-operative complications other than deaths. The three commonest immediate post-operative complications observed were wound infection (19.7%), pneumonia (9.0%) and sepsis (2.0%). In this series, there were 19 deaths giving an overall mortality rate of (6.4%). The low rate of mortality observed in study may be attributed to early presentation, early diagnosis and prompt surgical interventions.

Conclusion: The present study has depicted that acute abdomen commonly occurred in the 2nd to 3rd decades of life, majority caused by acute appendicitis and males were predominantly affected than females. Small bowel obstruction, sigmoid volvulus, PPUD and incarcerated hernias were other observed causes of acute abdomen.

Key words: Acute Abdomen, cause, Adults, Mekelle.

INTRODUCTION

The term acute abdomen refers to an intra-abdominal process causing severe pain and tenderness, a clinical presentation that often requires emergency surgical therapy (1,2). Abdominal pain is a common presentation at emergency department. It is vital that the physician has an understanding and be familiar with the presentations of common diseases that cause abdominal pain as this symptom is the most common presenting complaint in patients with surgical diseases of the abdomen (3,4). From the surgical point of view, acute abdominal pain is the cardinal symptom of acute abdomen. This challenging clinical scenario requires a thorough and expeditious work up to determine the need

for operative intervention to initiate appropriate therapy (5). Many diseases, some of which are not surgical or intra-abdominal can produce acute abdominal pain and tenderness. Therefore, every attempt is made to make a correct diagnosis so that the chosen therapy often a laparoscopy or laparotomy is appropriate (1-4). The diagnosis associated with an acute abdomen varies according to age and gender. The syndrome of acute abdominal pain generates a large number of hospital visits. Conditions that cause an acute abdomen can result in a serious complication or even death, especially if there is a delay in diagnosis and appropriate therapy, but the term acute abdomen should not be equated with the invariable need for operation (2).

The range of disease, extends from the relatively trivial to the immediately life threatening scenario and at-

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tempts to reach a diagnosis must sometimes be curtailed in the interests of immediate treatment (2). A detailed and organized history is essential to formulate an accurate differential diagnosis and subsequent treatment. Modern advances in imaging cannot and will never replace the need for a skilled clinician's bedside examination. The history must focus not only on the investigation of the pain complaints but also on past problems and associated symptoms (1). In addition, an organized and thoughtful physical examination is critical to the development of an accurate differential diagnosis and subsequent treatment algorithm (2-6). Despite newer technologies, including high resolution CT scanning, U/S and MRI, the physical examination remains a key part of a patient's evaluation and must not be minimized (1, 2).

A skilled clinician will be able to develop a narrow and accurate differential diagnosis on most patients on the conclusion of history and physical examination. Laboratories and imaging studies can then be used to further confirm the suspicions, reorder the proposed differential diagnosis, or less commonly, suggest unusual possibilities not yet considered (1).

The rationale of this study is to find out the magnitude, patterns and frequencies of different diseases and the burden of acute abdomen specific to the locality, where the study is carried out and to get baseline information for further prospective studies.

MATERIALS AND METHODS

This is a descriptive retrospective study of all patients with non-traumatic acute abdomen admitted to the surgical ward in Mekelle hospital and the study was conducted from September 2008 to August 2010. Case notes were obtained from patient's medical records and operation theatre registers. Adequate medical recording has been maintained in the hospital.

The source and the study groups (N-299) were patients of adult age category including males and females. Cases whose clinical symptoms and presentations suggestive of acute abdomen were subjected to thorough clinical investigations, to routine laboratory tests and imaging studies needed as per the clinical evaluations. Patients with acute abdominal pain caused by abdominal trauma and medical etiologies were excluded from the study. Data was collected from the medical records, registers and were analyzed by calculating the frequency of the causes of acute abdomen.

RESULTS

A total of 2628 surgical operations were performed during the study period. Of those, 299 cases were surgical emergency conditions for acute abdomen accounting for (11.4%) of all surgeries. During the study period, there were 989 cases of adult surgical emergency operations of which 299 (30.2%) were laparotomies for acute abdomen of different etiologies. Their age ranged from 15 to 95 years (mean- 31.5 years). Of these, 240 patients were males accounting for (80.3%) and 59 patients were female cases accounting for (19.7%). The male to female ratio was 4.1:1. (Table 1)

The clinical symptoms in patients with acute abdomen were abdominal pain in 299(100%), vomiting 149 (49.8%), abdominal distention 49(16.4%) and constipation 38(12.7%). Whereas abdominal tenderness 287 (96.0%), rebound tenderness 139 (46.4%), generalized 23(7.7%) and localized guarding 269(90.0%) were the frequent clinical signs at presentation (Table 2).The duration of illness at presentation ranged from 4 hours to 9 days (mean-3.5 days). Leukocytosis was observed in (69.8%) of all the cases. 82.6% of patients with peritonitis and (74.3%) patients with acute appendicitis had leukocytosis. Abdominal x-ray was requested in 105 (35.1%) patients including all cases of bowel obstruction and patients with high suspicion index of viscus perforation. Of those cases, 89.0% were found to be positive. U/S imaging was performed in 142 (47.5%) patients and 79.3% had positive findings.

Table 1: Age and Sex distribution of Acute Abdomen in adult, Mekelle –Ethiopia (2008-2010)

Age	Male (%)	Female (%)	Total (%)
15-19	39 (13.0)	8 (2.7)	47 (15.0)
20-29	74 (24.7)	22 (7.4)	96 (32.1)
30-39	43 (14.4)	13 (4.3)	56 (18.7)
40-49	24 (8.0)	4 (1.3)	28 (9.4)
50-59	20 (6.7)	5 (1.7)	25 (8.4)
>60	40 (13.4)	7 (2.3)	47 (15.7)
Total	240 (80.3)	59 (19.7)	299 (100.0)

Acute abdomen was most common in the age group between 20-29 years old accounting for 96 (32.1%) with male 74 (24.7%) dominance. Acute appendicitis was the most frequent cause of acute abdomen accounting for (53.2%) of all cases of acute abdomen. The 2nd most common cause was small bowel obstruction 48(16.0%) followed by sigmoid volvulus 38 (12.7%), PPUD 13(4.3%) incarcerated hernia 9(3.0%), colonic cancer 7(2.3%) and typhoid perforation 4 (1.3%) (Table 2).

The other observed causes of acute abdominal pain were cecal volvulus 3(1.0%), tubercular peritonitis 3 (1.0%), ovarian cyst torsion 3(1.0%), and primary intra-abdominal sepsis 3(1.0%) as depicted in Table 2. The rare causes of acute abdominal pain were infected ruptured gall bladder, ileo-sigmoid knotting, acute pancreatitis and mesenteric ischemia (Table 3).

Table 2: Signs and symptoms of patients presented with acute abdomen, Mekelle, Ethiopia, (2008-2010).

Symptoms	Number	%	Signs	Numbers	%
Abdominal pain	299	10	Tenderness	287	(96.0)
Vomiting	149	49.8	Rebound tenderness	139	(46.5)
Abdominal distension	49	16.4	Guarding generalized	23	(7.7)
Constipation	38	12.7	Guarding localized	269	(90.0)
			Pulse rate ≥ 110 b/m	108	(36.1)
			Temperature $\geq 38^\circ\text{C}$	93	(31.1)

Table 3: Causes of acute abdomen, Mekelle, Ethiopia, (2008-2010).

Causes	Number of patients	%
Acute appendicitis	159	53.2
Small bowel obstruction	48	16.0
Sigmoid Volvulus	38	12.7
PPUD	13	4.3
Strangulated hernia	9	3.0
Colonic Cancer	7	2.3
Typhoid perforation	4	1.3
Cecal Volvulus	3	1.0
Tubercular Peritonitis	3	1.0
Ovarian cyst torsion	3	1.0
Primary Intra-abdominal sepsis	3	1.0
Perforated gall bladder (sepsis)	1	0.3
Ileo-cecal intussusception	1	0.3
Pancreatic pseudo cyst	1	0.3
Ilio- sigmoid knotting	1	0.3
Mesenteric ischemia	1	0.3
Others	4	1.2
Total	299	100.0

Of the surgically treated patients for acute abdomen, 92(30.8%) had post-operative complications other than deaths. Wound infection 59(53.1%), pneumonia 27 (24.3%), and sepsis 6(5.4%) were among the frequent complications observed (Table 4).

(0.3%). Others were due to ileo sigmoid knotting (0.3), mesenteric ischemia (0.3%), gangrenous cecal volvulus (0.3%) and anastomotic leak (0.3%) as shown in (Table 5).

The overall mortality rate of emergency surgically treated acute abdomen was 6.4%, majority due to complicated small bowel obstruction 71.1%, sigmoid volvulus 41.9, primary intra-abdominal sepsis 2(0.7%), intussusceptions 1(0.3%) and strangulated hernia 1

Table 4: Post-operative complication and number of deaths in acute abdomen, Mekelle, Ethiopia, (2008-2010).

Complication	Number	percentage
Wound infection	59	53.2
Pneumonia	27	24.3
Sepsis	6	5.4
Death	19	17.1
Overall mortality	19/299	6.4

Table 5: Causes of mortality in acute abdomen: Mekelle, Ethiopia,(2008-2010).(n=19)

Causes	Number of patients	percentage
Small bowel obstruction	7	36.8
Sigmoid Volvulus	4	21.1
Primary intra-abdominal sepsis	2	10.5
Intussusceptions	1	5.3
Strangulated hernia	1	5.3
Ileo- sigmoid knotting	1	5.3
Mesenteric ischemia	1	5.3
Anastomotic Leak	1	5.3
Gangrenous cecal volvulus	1	5.3

DISCUSSION

Despite improvements in clinical evaluation and advancement in diagnostic methods, correct diagnosis of acute abdomen is still sometimes difficult (2,3). Patients with acute abdominal pain are heterogeneous group that consume a great deal of medical resources. Making the correct diagnosis is never easy. It demands attention to detail in taking the history and examining the patient and clarity of thought in analyzing the information that is obtained (2-4).

This study reveals 299 cases were surgical emergency conditions for acute abdomen accounting for (11.4%) of all surgeries. Previous similar studies in the country have reported (10.3%) by Tsegaye S, and Osman M, which is consistent to this study (7). During the study period, there were 989 adult surgical emergency procedures of which 299 (30.2%) were laparotomies for acute abdomen which is in agreement to previous similar studies (36.4%) by Kotisso B (6). The cause of acute abdomen is several and the relative frequency varies in different populations. Several factors are described to be responsible for these differences. Socio-economic factors and diet have mostly been incriminated to be responsible for the observed differences (6-10).

Males 240(80.3%) were predominantly affected than females 59(19.7%) with acute abdomen in the study area making the male to female ratio to (M:F; 4.1:1) and majority of patients were in their 20-29 years of life accounting for 96(32.1%) with male dominance 74 (77.1%), which relatively is in agreement to previous similar studies in Ethiopia and other African countries (6-16). There are few studies in Ethiopia describing the clinical features of patients with acute abdomen. Abdominal pain 299 (100%), vomiting 149(49.8%), abdominal distention 49(16.4%) and constipation 38 (12.7%) were the presenting symptoms. Whereas tenderness (96.0%), rebound tenderness (46.4%), localized and generalized guarding accounting for (90.0%) and (7.7%) respectively were the leading clinical signs observed in this series which is agreeable to previous similar studies in Ethiopia and other African countries (6-16).

The most frequently ordered study for acute abdominal feature was white cell count level which showed elevation in (69.8%) of all the cases. In patients with peritonitis and acute appendicitis, leukocytosis was observed in (82.6%) and in (74.3%) respectively. Plain abdominal x-ray was requested in 105 (35.1%) patients and had shown the most diagnostic accuracy in mechanical bowel obstruction and (89.0%) of them were found to be positive. Bowel obstruction is usually confirmed by abdominal radiography in decubitus and upright position. In these positions most of the findings were increased intestinal loop caliber, air fluid level and gas

increase in colon. U/S was done in 142 (47.5%) patients and about (89.0%) had positive findings which correlate to previous similar studies in Iran (8).

Among the etiologies leading to laparotomy, acute appendicitis was the most common and was observed in 159(53.2%) of the cases (Table 2). Earlier similar studies in Addis Ababa, Ethiopia and in Tehran, Iran indicated that acute appendicitis was the most frequent cause of acute abdomen accounting for 52.0% and 56.8% respectively which is in agreement to this series (6,8). Other studies in Ethiopia from Yirgalem and Gondar differently reported that small bowel obstruction was the leading cause of acute abdomen (3, 7) but another similar studies done in Nazareth, central Ethiopia (11), in Nigeria by Ajao(10), Zaire by Okoro(9) depicted that acute appendicitis was the frequent cause of acute abdomen which is again in agreement to this study (2, 4, 6, 8-9, 12-23).

Small bowel obstruction, sigmoid volvulus and PPUD were among other major causes of acute abdomen. Other causes were also strangulated hernia, colonic cancer, typhoid perforation and ovarian cyst torsions. Acute Pancreatitis, cecal volvulus, ileo sigmoid knotting and infected gall bladder perforation were among the rare causes of acute abdomen observed in this series.

The overall mortality rate of surgically treated acute abdomen was 19/299(6.4%) which is in agreement to studies in Gondar (9.3%) but is low rate to the study done in Yirgalem (13.5%), Datubo (13.3%) and to the studies in Tikur Anbessa hospital (14.0%), (3,6,7,12). The low mortality rate reported in this series strongly correlates to the fact that majority of patients in this study consists acute appendicitis with a relatively low mortality rate and is due to early presentation. Of the patients who died were operated for small bowel obstruction (2.3%), sigmoid volvulus (1.3%), primary intra-abdominal sepsis (0.7%) and strangulated hernia (0.3%). Others were due to ileo sigmoid knotting, mesenteric ischemia, gangrenous cecal volvulus and anastomotic leak.

In conclusion, acute abdomen is commonly encountered surgical illness accounting for 30.2% of surgical emergencies done in the study area. This study has shown a tendency towards predominance by acute appendicitis followed by small bowel obstruction sigmoid volvulus and PPUD, observed in some similar earlier studies. The overall mortality rate and post operative hospital mortality was 6.4%.

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