
ORIGINAL ARTICLE**PATTERN AND CLINICAL PRESENTATION OF ACUTE APPENDICITIS IN ADULTS IN ZEWDITU MEMORIAL HOSPITAL****Abraham Deneke^{1*}, MD, Birhanu Tadesse², MD****ABSTRACT**

BACKGROUND: *Appendicitis is one of the commonest surgical emergencies encountered in adult and children. The disease is thought to be rare in Africa, however certain studies in Africa didn't substantiate this. The objectives of this study were to determine the pattern, clinical presentation and outcome of surgical intervention in patients with acute appendicitis.*

METHODS: *The study was retrospective analysis of 277 hospital records of patients who had appendectomy from January 1, 1996 to December 31, 1998 in Zewditu Memorial Hospital, Addis Ababa.*

RESULTS: *Of the total 653 acute abdomen cases admitted, 305 (46.7%) were acute appendicitis. Out of the 277,16 (5.8%) patients found to have right lower quadrant mass, which were managed conservatively while 261(94.2%) were operated. Intra operatively it was found that 184(70.6%) were simple, 45(17.4%) perforated 25(9.5%) gangrenous and 7(2.5%) were appendice abscesses with amputated stump left. Male to Female ratio was 2.6:1 and with peak age occurring between 13-30 years. All patients had abdominal pain, 213 (76.9%) vomiting and 195 (70.4%) rebound tenderness. Digital rectal examination was done in 127(45.8%) of which tenderness being elicited in only 80 (63.0%).*

CONCLUSION: *Acute appendicitis is the most common cause of acute abdomen, therefore, physicians should have high index of suspicion if patient presents with acute abdominal pain. [Ethiop J Health Sci. 2003; 13(2): 117-123].*

Key words: *Acute abdomen, appendicitis, gangrenous appendix, perforated appendix, MC-Burney's point.*

INTRODUCTION

Acute appendicitis is one of the commonest surgical emergencies encountered in both children and adults (1). The etiology of the disease is not yet defined though most speculate its association with low fiber diet intake based on the high incidence observed in affluent society (2,3).

Although the disease is thought to be rare in Africa (4,5), the findings are controversial since different studies from Africa haven't substantiated this and in fact appendicitis is not rare in Africa (6,7).

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For instance, studies carried out in some parts of Africa like Kenyatta-National Hospital, Nairobi, in children and adults, in Khartoum as well as in Nigeria by different authors indicated that appendicitis is most common cause of acute abdominal emergency operations (1,9-11).

However, few studies were done in Ethiopia. To date, two studies were conducted on children in Ethio-Swedish Children Hospital (11, 13) and one on all age groups in North West of Ethiopia, Gondar Hospital (13), all of which confirm the reports, which have shown that appendicitis is a rare disease in Africa.

The gold standard surgical approach for a patient suspected to have acute appendicitis is transverse or vertical incision at MC-Burney's point i.e., two third from umbilicus on imaginary line drawn between the umbilicus and anterior superior iliac spine. Midline or paramedian, incision is utilized if presentation of patient is generalized peritonitis and diagnosis other than appendicitis as a cause is suspected. The rate of normal appendectomy after presenting with clinical feature of appendicitis averages 16 percent (16). Mortality rate from appendicitis in USA has steadily decreased from 9.9 per 100,000 in 1939 to 0.2 per 100,000 patients in 1986 due to better diagnosis and treatment (16), but higher for developing countries.

Thus, knowledge on prevalence, etiology and complications of this disease would enable better preparation for preventive work as well as for reduction of morbidity, mortality and cost of health care. This study attempted to determine the pattern, clinical presentation and out come of surgical intervention in adult patients presented with acute abdominal problem to Zewditu Memorial Hospital (ZMH), Addis Ababa.

MATERIALS AND METHODS

Zewditu Memorial Hospital is a teaching and referral hospital affiliated with Department of Surgery, Faculty of Medicine, Addis Ababa University. It is located in Addis Ababa, the capital city of Ethiopia. It has 38 surgical beds for elective surgery and additional 8 beds, which are reserved mostly for emergency surgical admissions. The hospital gives service for patients' aged 13 and above.

The source population was all cases of acute abdomen admitted to ZMH from January 1996 to December 31,1998. A total of 653 patients with diagnosis of acute abdomen were seen. Out of a total 653 patients with acute abdomen 305 patients were cases of appendicitis. Further more the discharge book showed that 277 patients had appendicitis, 16 patients were appendiceal mass and the cards of 28 patients were not available for analysis. Finally the 261 patients record were organized, analyzed and presented in this study.

Records of individual patients noted by the admitting residents, resident performed the surgery and the consultant on duty during postoperative follow up was included in the analysis. The data collected using pre-prepared data collecting format. The data were entered, edited and analyzed using EPI-Info statistical software and presented using frequency tables and figures.

Definition of terms: Acute abdomen defined as acute abdominal pain of sudden onset, is an emergency state which usually requires surgical intervention.

Permission from the department of surgery of ZMH was secured verbally to review patients card for this study.

RESULTS

During the three years a total of 653 patients were admitted with the diagnosis of acute abdomen of which 305 (46.7%) patients presented with a clinical diagnosis of acute appendicitis. Out of the 305 patients' records, 277 (90.8%) were retrieved for analysis and the remaining cards could not be traced.

Out of the 277 patients, 201 (72.6%) were males and 76 (27.4%) were females, giving male to female ratio of 2.6:1. One hundred sixty four (59.5%) of cases came from Addis Ababa, 26 (9.4%) from outside Addis and the addresses of the remaining 87 (31.4%) patients was not recorded. The age at presentation ranged from 13-75 years with mean ages of 25.6 years. The majority of cases, 212 (76.5%) occurred between the ages of 13 and 30 years (Table 1).

The time lapse between the onset of symptoms and patient presentation to the hospital is shown in Fig1. Majority, 164 (59.2%) presented within 1-3 days and 64 (23.1%) with 4 or more days after the onset of symptoms while only 47 (17.7%) presented in the first 24 hours of onset of symptoms.

Table 1. Distribution of Cases of appendicitis by Age, Zewditu Memorial Hospital, Addis Ababa, January 1996-December 1998

Age in year	Number of cases	Percent
≤20	112	40.5
21-30	100	36.1
31-40	44	15.9
41-50	14	5.0
>50	7	2.5
Total	277	100

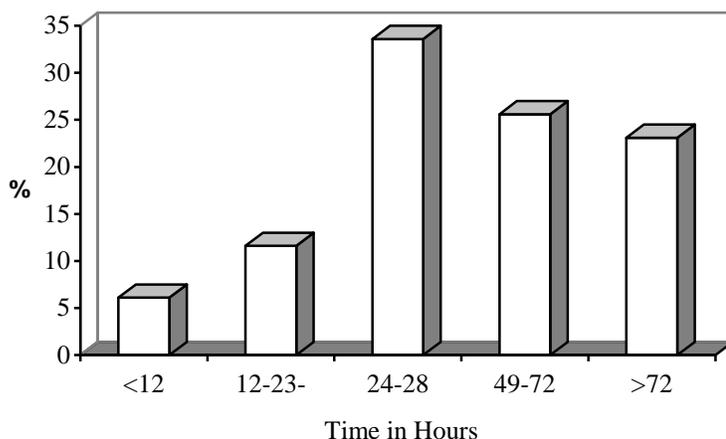


Fig 1. Distribution of time lapse during presentation to Hospital, Zewditu Memorial Hospital, Addis Ababa, January 1996-Dec 1998

The clinical presenting pattern is shown in Fig 2. Shifting abdominal pain and vomiting were the commonest symptoms while right lower quadrant tenderness and rebound tenderness were the commonest signs. Digital rectal examination was recorded only for 127 (45.8%) patients, out of which 63.0% was found to have right lower quadrant tenderness. Anorexia was not recorded in all patients.

White blood cell (WBC) count was done for 217 (78.3%) patients. Out of

which 49.4% had count between 4000-1100 cells/mm³ and the rest had a count greater than 1100/mm³.

Out of the 277 clinically diagnosed cases of acute appendicitis 261 were operated and 16 were found to have mass at right lower quadrant of the abdomen examination. The later were managed conservatively and discharged with improvement and advised to come back for interval appendectomy.

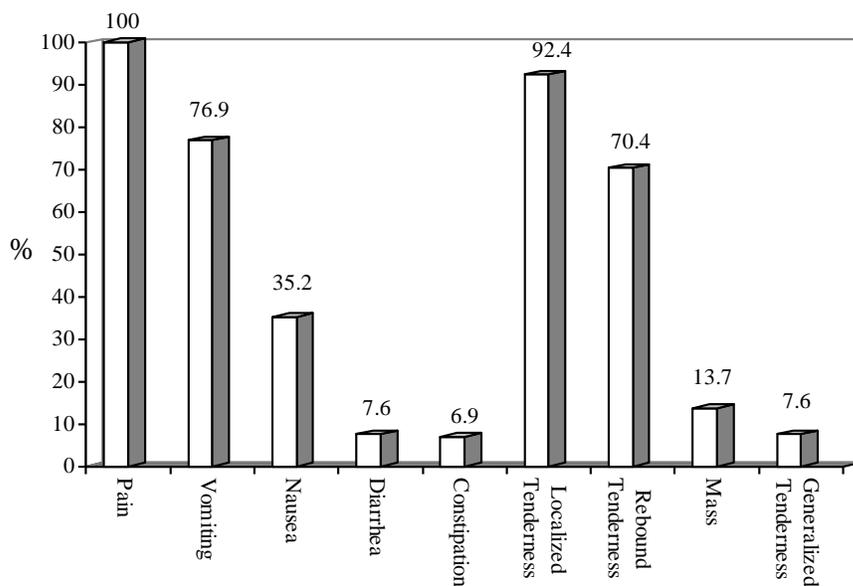


Fig 2. Distribution of Clinical Presentation of Patient with Acute Appendicitis, ZMH, AA, Jan 1996-December 1998

Most patients, 206 (78.9%) were operated through transverse abdominal incision at Mc- Burney’s point while in the rest 55 (21.1%) mid-line or Para median abdominal incision was made. The latter incision was utilized mostly in female patients and in patients presented with generalized peritonitis.

Intra-operative findings are shown on table 2. Accordingly perforation rates were 17.2%, 9.6% had gangrenous appendix and 2.5% found to have abscess intra operatively. In the later the abscess was drained and the appendix was removed concomitantly. There was no report of removal of normal appendix after operating for presumed appendicitis. Three patients (1.2%) died postoperatively after surgery. All of them presented in more than four days after the onset of illness and found to have features of generalized peritonitis.

Appendicitis constituted most of the acute emergency abdominal operations for the years 1996, 1997 and 1998 in Zewditu Memorial Hospital with respective figures of 86(39.1%), 82(42.5%) and 137(57.1%) [Table 2].

Table 2. Distribution of Emergency Admission for acute abdomen by year, Zewditu Memorial Hospital, Addis Ababa, January1996-December 1998

Year	All acute Abdomen per year	Appendicitis	
		No	%
1996	220	86	39.1
1997	192	82	42.5
1998	241	137	57.1
Average	653	305	46.7

Table 3. Distribution of intra-operative gross findings of operated cases, January 1996 – December 1998, Zewditu Memorial Hospital

	Number	
	of cases	Percent
Simple	184	70.6
Perforation	45	17.4
Gangrenous	25	9.5
Abscess	7	2.5
Total	261	100

DISCUSSION

Appendicitis though thought as uncommon cause of acute abdomen in Africa, some study end up with contrary result (5, 9, 11). This study has shown that acute appendicitis is not a rare disease in Africa; this is in agreement with other studies (1,13,15). The male preponderance and the commonest age of presentation (13-40 years) are in agreement with other studies in Ethiopia and some African countries (5, 7, 13, 14).

The clinical presentation of abdominal pain in all patients with a shifting pain in 223 (80.5%) of cases and associated vomiting in 213 (76.9%). In addition, localized tenderness in 256 (92.4%) with rebound tenderness in 195 (70.4%) in the right lower quadrant found on examination are similar to studies by other investigators (1,7). Bowel habit change i.e., diarrhea and constipation were found in 7.6% and 6.9% respectively. This is also in agreement with low incidence of constipation (13.0%) and diarrhea (10.0%), reported by Ahmed (14), and 10.0% of diarrhea and 15.0% of constipations found by Ochola - Abila (1).

Rectal digital examination done in 127 (45.8%) of patient out of which 80 (63.0%) of patient had tenderness which is comparable to the finding by Bonnelo (15) in which he found positive correlation in 3.0-72.0%. Based on the wide variation

found on other studies we can say tenderness on rectal examination can be supportive but its absence shouldn't lead to exclusion of the diagnosis of appendicitis. Besides it indicates that most physician might be reluctant to do digital rectal examination in patients with suspected acute appendicitis.

Analysis of the WBC in relation to diagnosis of a cute appendicitis as in most studies end up with controversial results (14). It was found that 50.0% of patients had WBC count above $11,000/\text{mm}^3$, which is above normal. A high count is supportive to clinical diagnosis but a normal count ($4000-1100/\text{mm}^3$) cannot rule out appendicitis since the rest 50.0% of cases with proven appendicitis found to lie in the later group.

Transverse or vertical incision at MC-Burney's point was utilized in 206 (78.9%) of the patients, which is in agreement with 78.0% found by Ahmed (14). A perforation rate of 45 (17.2%) in this study correlates well with other studies done in adult age groups reported by Ahmed (14). Three (1.2%) postoperative deaths are low when compared to other studies in this country (9,11,13). This could be as a result of better awareness and early treatment seeking behavior of the people as observed most are from Addis.

In this study there was no report of normal appendix intra-operatively, which contradicts studies done somewhere else (14,16,17). This could be either too specific diagnostic and admission criteria of appendicitis which result in false negative diagnosis or too sensitive diagnostic criteria in other countries. The common trend observed among surgical residents in ZMH is a tendency to report as "minimally inflamed appendix" instead of a grossly normal looking appendix intra-operatively. Another common limitation is failure to send the removed specimen for pathological analysis. The above-

mentioned reasons might contribute for the exaggerated result of the absence of normal appendix.

In conclusion acute appendicitis is the most common cause among all emergency acute abdominal operations performed in ZMH and we believe that there are similar high incidences in other hospitals in Addis Ababa. Therefore a high index of suspicion should be born in mind by physician in patients presenting with acute abdominal pain in order to have early diagnosis, avoid complication and to reduce mortality and cost associated with complicated appendicitis.

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