

Acute Appendicitis as the Commonest Abdominal Surgical Emergency in a Nigerian Teaching Hospital Situated In A semi- Urban Environment

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ABSTRACT:

BACKGROUND:

In the last 40 years, the pattern of general surgical emergencies in the developing parts of the world had shifted in favour of acute appendicitis. Several articles on the incidence of acute appendicitis from developing parts of the world were from urban settings and had exposed the trend.

AIMS AND OBJECTIVES:

The aim of the study is to ascertain the pattern of general surgical emergencies in a semi-urban setting.

SETTING OF THE STUDY: The study was carried out in a 200 bed Teaching Hospital Facility situated in a semi-urban environment.

MATERIALS AND METHODS:

This is a retrospective analysis of all general surgical emergencies carried out from January 2013 to December 2015. Data was extracted from patients' case note, theatre and ward records. The variables analysed were age and sex of patients, diagnoses made, treatment given and the outcomes of treatment.

RESULTS:

148 patients had general surgical emergencies comprising 68 females and 80 males with a male to female ratio of 1:2:1. Acute appendicitis was the commonest cause of emergency abdominal surgery accounting for two thirds of cases (66.2%). Intestinal obstruction made up 18.9% of cases while the figures for intestinal perforations and abdominal trauma were 8.8% and 6.1% respectively. Appendicectomy occurred in the young and they all had appendicectomy. No mortality was recorded. Inguinal hernia was the commonest cause of intestinal obstruction while perforated peptic ulcer and gunshot injuries were the commonest cause of intestinal perforation and abdominal injury respectively.

CONCLUSION:

Acute appendicitis is by far the commonest cause of general surgical emergencies in our environment. This may not be unconnected to a tendency for young adults to adopt a western type of diet and lifestyle in this semi-urban community. Intestinal obstruction remains an important cause of acute abdomen with inguinal hernia still the commonest cause.

KEYWORDS: General surgical emergency, Acute appendicitis, semi-urban, intestinal obstruction.

Date of Submission: 04-12-2022

Date of Acceptance: 16-12-2022

I. INTRODUCTION:

In the developing parts of the world, general surgical emergencies continue to challenge various levels of health care facilities. A tertiary hospital situated in a developing country must be equipped and capable of dealing with general surgical emergencies convincingly and comfortably. Abdominal surgical emergencies form a major bulk of emergencies presenting to the General Surgeon. They constitute the Acute Abdomen (AA) which is defined as the sudden onset of pain, tenderness and rigidity and usually requiring emergency abdominal surgery. [1] it may cause significant morbidity and mortality. The pattern of the aetiologies of the acute abdomen is influenced by demography, diet, socioeconomic and geographical factors. Sophisticated investigations may increase the diagnostic yield in cases of the acute abdomen but these are not readily available in our centre thus there is the need to know the pattern of these emergencies.

The clinical teacher of undergraduates and post-graduates students will benefit from this knowledge of the pattern and frequency of abdominal surgical emergencies by teaching them to his students. As the adage goes, "common things occur commonly". Also, health planners can use this valuable information to equip and staff the health facilities at various levels.

The Niger-Delta University Teaching Hospital, Okolobiri was established in the year 2007. It is the clinical arm of the Niger-Delta University, Wilberforce Island,

Bayelsa State, Nigeria. It is a 200 bed facility situated in a semi-urban town which is about 30kilometers from the state capital, Yenagoa. Studies done in urban Nigerian cities have shown acute appendicitis as the commonest cause of the acute abdomen and indication for emergency abdominal surgery.[1,2,3,4,5] We are seeking to see if this is the case in our environment.

The aim of this study is to ascertain the pattern of general surgical emergencies in our hospital. The specific objectives are to determine the frequency of the various causes of abdominal surgical emergencies, to determine the age and sex distribution of patients who had abdominal surgical emergencies as well as the treatment they received and their outcomes.

II. METHOD:

This study is a retrospective analysis of 148 general surgical/emergency surgeries carried out over a 3year period (Jan 2013 to December 2015). Permission was sought from the Hospital's Research and Ethics Committee and permission was granted for us to access the patients' medical records. General surgical emergency operations performed within this period were extracted from the operating theatre register. The patients' clinical details were extracted from their case notes, theatre records and ward records. The data extracted included age, sex, diagnosis, treatment received and the outcome of treatment. These were entered into a proforma and then analysed. Other surgical entities like intestinal obstruction, intestinal perforations and abdominal trauma were analysed for the specific aetiologies. Exclusion criteria were gynaecological causes of acute abdomen, paediatrics patients, acute abdominal pain successfully managed conservatively and medical causes of acute abdomen.

Data was presented as simple ratios and percentages.

III. RESULTS:

148 patients had general surgical emergency procedures over the studied period. There were 68 females and 80 males, giving a 1:1.2 female to male ratio, a very slight male preponderance.

The frequency of various surgical diseases diagnosed and treated are as follows

(Table 1): Acute Appendicitis (66.2%), intestinal obstruction (18.9%), intestinal perforations (8.8%) and abdominal injury (6.1%).

Acute appendicitis which accounted for approximately 2 out of 3 of the general surgical emergencies had 44 males to 54 females giving a male to female ratio of 1:1.2. The mean age for female was 26.7 years and that of the male was 36 years. All of them had emergency appendicectomy with no mortality.

Of the 28 patients with intestinal obstruction, 15 were due to inguinal hernia, 11 from post-operative adhesions and two from a femoral hernia. 13 of the 15 patients with obstructed inguinal hernia were males and two females. One of the females had bilateral obstructed inguinal hernia. Out of the 13 males, nine had their hernia on the right side. In the females, two were left sided and one right sided. Both patients with obstructed femoral hernia were elderly; a 75 year old male and an 85 year old woman.

Of the 11 patients with post-operative adhesions, 6 were females and 5 were males.

Gastro-intestinal tract perforations accounted for 8.8% of the cases.

Peptic ulcer perforations occurred in 11 patients (7.4%) and typhoid ileal perforation in 2 (1.4%). Nine of the patients with perforated peptic ulcer disease were males and 2 were females. There were 4 duodenal ulcer perforations and 7 gastric perforations. The mean age for the males was 48.5years. The 2 females aged 38 years and 75 years had gastric ulcers. They all had emergency exploratory laparotomies with closure of perforation with Grahams patch and peritoneal lavage. They had full course of antiH.Pylori therapy. Non of the biopsy of the gastric ulcers was positive for malignancy. The two patients with typhoid ileal perforations had exploratory laparotomywith closure of the perforations. There were no mortalities.

Abdominal injuries requiring emergency surgery occurred 9 times, (7 males and 2 females). Blunt abdominal injury following road traffic accident occurred in 4 patients (both 2 females were in this group). The other group of 5 patients had gunshot abdominal wounds from assaults.

IV. DISCUSSION:

Surgical emergencies have assailed the human race for a long time. The pattern of general surgical emergencies in this study is as laid out in Table 1. All the diseases or conditions listed in the table are usually accompanied by considerable abdominal pain for which the patient would be forced to seek medical help.

There are several studies on the pattern of acute abdomen and emergency abdominal surgery in the literature. [1,2,3,4,5] Some of these studies showed a slight male preponderance. Alagoa working in Port Harcourt reported male to female ratio of 1:3:1. [1] This is similar to the result in our study which revealed a male to female ratio of 1:1.2. Obonna et al in Ile-Ifeand Nwashilietal in Benin also reported similar results. [4,5]

The causes of the acute abdomen and the indications for emergency abdominal surgery vary according to geographical location. However, in most studies done on this topic, acute appendicitis is reported as the commonest cause. The incidence ranges from 30.3% to 61.3%. [3,5,1,2,4] In our study it was 66.7% which is reasonably high. Ajao in 1981 in Ibadan reported acute appendicitis as the commonest cause of abdominal emergencies. [6] Acute appendicitis has been observed to be decreasing in incidence in the Western world while it is on the increase in low and middle income countries. [7,8]. Davey about 50 years ago had commented on the possibility of this trend as has been noted by recent authors. [9]. It would appear that the conjecture by Dennis Burkitt that the adoption of Western diet will predispose to an increase in Western type diseases like acute appendicitis and colorectal carcinoma in Africans, holds true today. [10] Our hospital is located in a community which can be described as semi-urban. A lot of people have adopted a diet of refined food like bread, pasta, fried, fatty food and red meat in preference to the staple African type diet which consists of roots, tubers, grains, vegetables, fruits and fish. This African type of diet is rich in fibre and antioxidants and is shown to be protective against colorectal cancer and acute appendicitis.

The male to female ratio of patients with appendicitis in our study was 1:1:2. This is the same as the ratio reported in a larger, multi-center study of 538 appendicectomy specimens. [11]. The mean age was 26.7 years for females and 36 years for men. This is similar to other studies which concluded that appendicitis is a disease of the young. [11,12]. The study by Udoe and Koroye which spanned an 8 year period, included the patients in this study. The negative appendicectomy rate was 16% and the perforation rate was 4%. [11] intestinal obstruction as an entity was next to acute appendicitis in this study constituting 18.9% of cases. Alagoa and Jebbin in Port Harcourt showed intestinal obstruction was the third commonest cause of acute abdomen constituting 19.4% of cases. [1] Agboola in Ilorin reported an incidence of 27.9%. [3] They were the second commonest cause of acute abdomen in both studies. Other studies reported incidences ranging from 13.9% to 34%. [4,2,5,13]. A study in Ethiopia reported intestinal obstruction as the commonest cause of acute abdomen. [13]. Over the decades there has been a change in the causes of intestinal obstruction in Nigeria. Cole working in Ibadan in 1965 reviewed 436 cases of intestinal obstruction. [14] He found inguinal hernia to be the commonest cause of obstruction closely followed by intussusception. No intussusception was recorded in this study. Studies are showing that the incidence of adhesions as a cause of intestinal obstruction is increasing while that of inguinal hernia is reducing. [15,16].

Obstructed inguinal hernia were the commonest cause of intestinal obstruction in our study affecting 15 of the 28 patients. This is the case in similar studies conducted. [1,2,3,4]. Inguinal hernia is the commonest abdominal wall hernia and occurs worldwide. Inguinal herniae are by far commoner in males but affects both sexes. This was demonstrated in our study with 13 of 15 patients being males. Right sided herniae were commoner in this series. All patients were treated surgically with or without resection of viscus. In a prospective study on strangulated inguinal herniae by Kombo and Tabwei in our center which covered the period and patients in our study, a mortality rate of 17.7% was reported. [17] all of the 14 mortalities had bowel resection for gangrene and there was a statistically significant correlation between late presentation to hospital and resection rate. [17] Over the years, patients had become aware of the desirability of elective repairs of herniae and more facilities capable of elective repair of hernia had evolved, hence the fall in the number of inguinal hernia presenting obstructed. Gastro-intestinal tract perforations (n=13) comprising 11 perforated peptic ulcers and two typhoid ileal perforations were treated. Increasing age and late presentations are predictors of mortality in perforated peptic ulcer. [18] With increasing age comes an increase in the incidence of comorbidities like hypertension and diabetes. These adversely affects outcomes. Delayed presentation is common in our environment and is due to an interplay of poverty, illiteracy and paucity of health facilities. Many of our patients present at the stage of bacterial peritonitis with septic shock. Treatment is with resuscitation, laparotomy with closure of the perforation and thorough peritoneal lavage. Typhoid perforations accounted for 1.4% of the cases of general surgical emergencies within the study period. Typhoid perforation as a cause of acute abdomen is commoner in the western and northern parts of Nigerian. [2,4] In these studies the incidence was higher than that of perforated peptic ulcer. Some authors have hypothesized that typhoid perforations may be the commonest cause of acute abdomen. [19]. In a study of 1330 patients in Sokoto in 2012, the incidence of typhoid ileal perforation was 13.5% and it accounted for the single most common cause of death. [2]

Abdominal trauma was the cause of surgical intervention in 6.1% of our patients. In our studies, the incidence ranges from 7.1% to 25.6%. [5,4,1]. With increasing communal clashes, social unrest, increased criminal and cult related activities came an increase in the incidence of penetrating abdominal injuries due to gunshots.

This if facilitated by an increased proliferation of small arms. Young males are more affected than females as seen in our study. This is similar to other studies. [20]

TABLE 1

		Number	Percentage (%)
1.	Acute Appendicitis	98	66.2
2.	Intestinal obstruction	28	18.9
•	Inguinal hernia-15(10.1%)		
•	Post operative adhesions -11 (7.4%)		
•	Femoral hernia -2(1.4%)		
3.	intestinal perforations	13	8.8
•	Peptic Ulcer Perforation – 11(7.4%)		
•	Typhoid Perforation -2(1.4%)		
4.	Abdominal injury	9	6.1
•	Blunt abdominal injury 4(2.7%)		
•	Penetrating abdominal injury (gunshot) 5(3.4%)		
Total		148	100

Table showing frequency of the diagnoses of general surgical emergency Operations.

V. CONCLUSION:

It would appear that the conjecture of previous writers (9,10,21) that the adoption of “Western diet” by Africans in preference to indigenous “African Diet” which is rich in fibre would lead to increase in western type diseases had become credible with the increase in Acute Appendicitis frequency in this study. The average African now indulges in bread, noodles and fast foods from restaurants. The resultant effect is increase in the incidence of acute appendicitis and possibly other diseases like colonic diverticulitis, cancer of the colon and possibly atherosclerosis.

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