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Original Research Article

Complicated appendicitis: experience from central region of Ghana

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ABSTRACT

Background: Acute appendicitis is a common surgical abdominal emergency. The aim of this study is to determine the incidence, presentation and immediate outcome of acute appendicitis in a new teaching hospital in Cape Coast.
Methods: All patients who had surgery for acute appendicitis at the central regional Hospital, cape coast from 1st January 2011 to 25th October 2012 were retrospectively reviewed.
Results: During the study period five hundred and four emergency surgical operations were performed. Abdominal emergency operations constituted 81.5% of these emergencies (411/504). Seventy-seven patients who had appendicectomy during the period constituted 18.7% of all abdominal emergencies. Seventy-six of the patients had requisite details for analysis and form the basis of this study. Appendicitis was seen more in the second and third decades of life with male preponderance. Thirty-one (40.3%) had complicated appendicitis (perforated/ ruptured appendicitis and gangrenous appendix). Though appendicitis is uncommon in children less than ten years, more than 80% presented with complicated appendicitis. Only 6.6% of patients were 50 years and above and they all presented with complicated appendicitis. In male patient with appendicitis, 33.3% presented with complicated appendicitis while in females, 57.9% presented with complicated appendicitis. Two (2.6%) patients died in the immediate postoperative period.
Conclusions: About one out of five patients who had emergency abdominal surgical operation had acute appendicitis with 40% of them presenting with complicated appendicitis. Complicated appendicitis is more common in females, children less than 10 years and patients 50 years and above. Immediate postoperative mortality is associated with ruptured appendix.

Keywords: Appendicitis, Gangrenous appendix, Ruptured appendix

INTRODUCTION

Acute appendicitis is the most common emergency surgical abdomen in developing and developed countries.[1,2] This makes appendicectomy the most frequently performed emergency abdominal operation.

It is known to be more common in white than the nonwhites.[3] The incidence is decreasing in the whites but increasing in the nonwhites.[4] In Africa the annual frequencies range from 22.9 to 129 new cases.[5-8] South African reports in the last quarter of the 20th century estimated that 10% of the white population had undergone appendicectomy as compared to less than 1% of the African population.[9-12] Most cases reported in Africa are from urban teaching hospitals with only few from rural hospitals.[13] The aim of this study is to determine the incidence, socio-demographic profile, presentation and immediate outcome of acute appendicitis in a regional hospital in Ghana.

METHODS

The Central Regional Hospital, Cape Coast is a referral hospital with 250 beds. This has recently been upgraded

to a teaching hospital, with 400 beds. All emergency patients were first seen at the Accident and Emergency Room. Those with diagnosis of acute appendicitis had immediate surgical intervention after adequate preoperative evaluation and optimization. The emergency room, operating room and surgical ward records at Central Regional Hospital, Cape Coast were searched, and all cases of appendicitis seen between 1st January 2011 and 25th October 2012 were reviewed. Only those who had emergency surgery for appendicitis were included in this study. The biodata of the patients, pattern of presentation, findings at surgery, operative procedure done, and outcome were extracted. Data was analysed using SPSS version 18 and presented as tables and graphs.

RESULTS

During the period January 2011 to October 2012, five hundred and four emergency surgical operations were performed. Abdominal emergency operations constituted 81.5% of these emergencies (411/504). Seventy-seven patients had appendicectomy during the period.

This is 18.7% of all abdominal emergencies. Seventy-six of the patients had the required details for analysis and form the basis of this study. Appendicitis was seen more in the second and third decades of life (Figure 1). The youngest patient was 4 years old and the oldest patient was 72 years with a mean of 27.6 years (SD 14.7). The male to female ratio at presentation was 3:1 (Figure 2).

In this study, 31 out of the 76 patients (40.7%) who had appendicectomy had complicated appendicitis (perforated/ ruptured appendicitis and gangrenous appendix).

Though appendicitis is not common in children less than 10 years, 83.3% of them present with complicated appendicitis. In patients age 50 years and above, they all presented with complicated appendicitis though they constituted only 6.6% of patients with appendicitis (n=5, p=0.001) (Table 1).

Table 1: Age distribution versus various types of presentation of appendicitis (n= 76).

Age range (year)	Diagnosis			Total
	Acute appendicitis	Ruptured appendix	Gangrenous appendix	
0-9	1	2	3	6
10-19	6	8	3	17
20-29	20	3	0	23
30-39	10	2	1	13
40-49	9	0	3	12
50-59	0	1	1	2
60-69	0	2	0	2
>70	0	0	1	1
Total	46	18	12	76

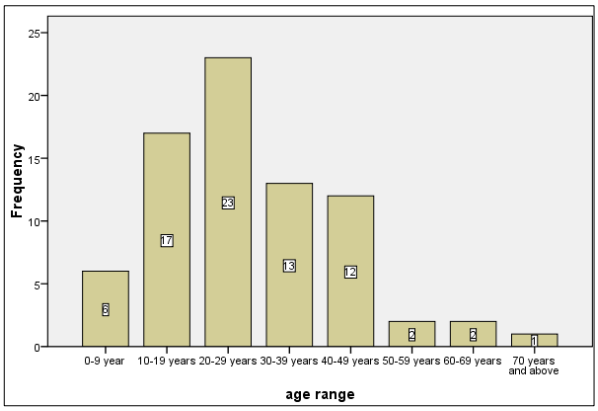

Figure 1: Age distribution of patients with appendicitis (n= 76).

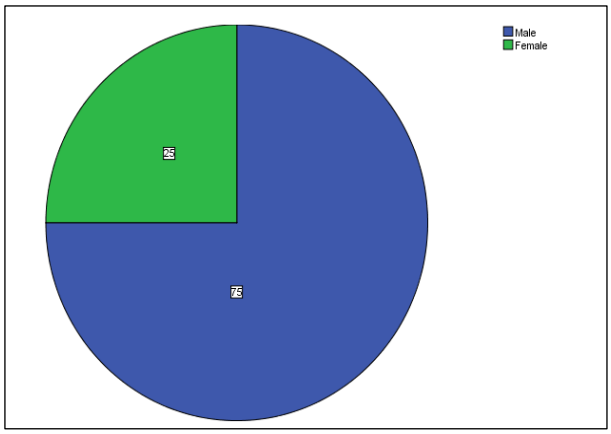

Figure 2: Sex distribution (in percentage) of patients with appendicitis (n= 76).

In patients with ruptured appendix, the male female ration is 2:1 (Figure 3) while in gangrenous appendix it is 1.4:1 (Figure 4). Complicated appendicitis is relatively more common in females than males (Figure 5). In male patients with appendicitis, 33.3% presented with complicated appendicitis while in females, 57.9% presented with complicated appendicitis.

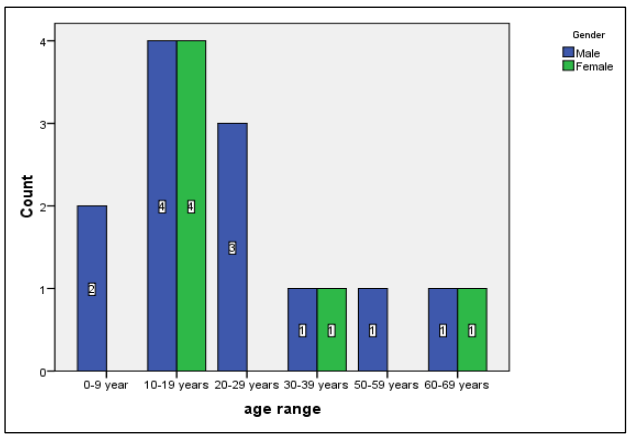

Figure 3: Patients with ruptured appendix versus age distribution gender (n= 76).

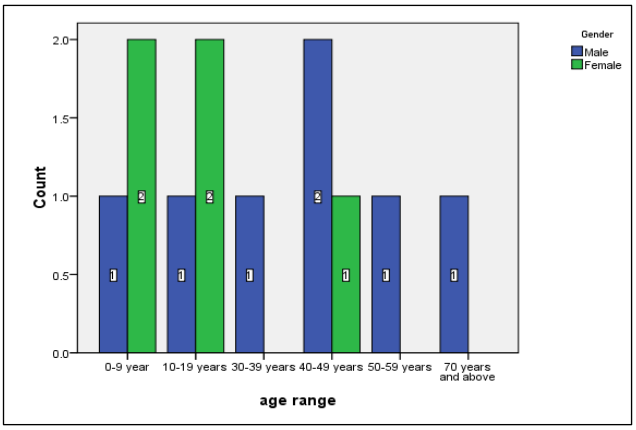

Figure 4: Patients with gangrenous appendix versus age distribution gender (n= 76).

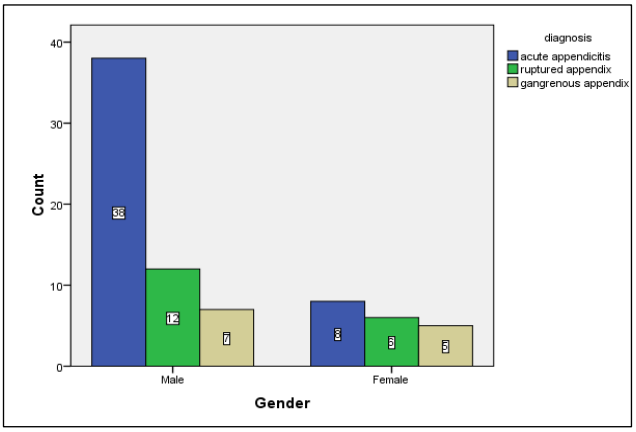

Figure 5: Appendicitis versus gender (n= 76).

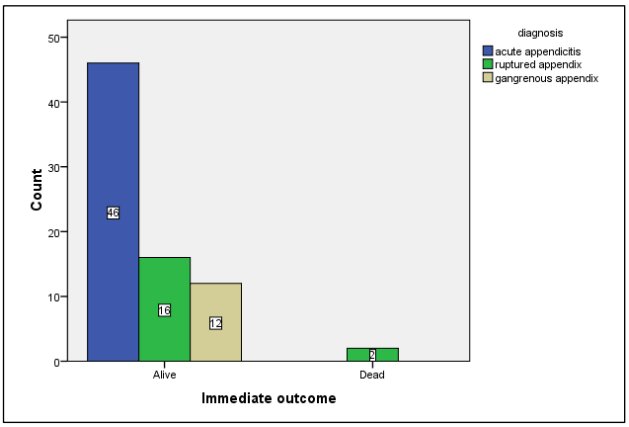

Figure 6: Immediate postoperative outcome in patients with appendicitis (n=76).

Four hundred and eleven patients had abdominal emergencies. Eleven of these patients died in the immediate postoperative period. Two (2.6%) patients who had surgery for appendicitis died in the immediate postoperative period (Figure 6). Both of them had ruptured appendix presenting at ages 9 and 12 years respectively.

DISCUSSION

During the study period, four hundred and eleven patients had emergency abdominal surgeries. This is about twice what was previously reported from the same centre.[14] This may be as a result of increase patient load since the hospital is been re-designated a teaching centre for medical undergraduate training for the school of Medical sciences, university of Cape Coast.

As with previous studies, the peak period of presentation was the second and third decade of life. There was a male preponderance in this study. The highest presentation of complicated appendicitis is in the age group 10-19 years (p= 0.001).

Prompt diagnosis and early surgical intervention is imperative to prevent complications with its attendant high morbidity and mortality. Of concern is the high complication rate, about 40% of the patients had complicated appendicitis. This is high compared to studies in the western world but similar to other studies in developing countries and other centres in Ghana. For a regional hospital with limited resources, this is significant in terms of burden of care and hospital stay. This is probably as a result of delay in presentation or referral from primary health care facilities. As a result of this finding we've commences a prospective study to identify the possible cause of delay. Pittman-Waller et al have however shown that the delay in seeking medical attention is the cause of high complication rate and not the result of diagnostic dilemma or surgical delay.[15]

In developing countries, the high incidence of infective diseases such as abdominal tuberculosis, worm infestation, amoebiasis, schistosomiasis, and typhoid that present with nonspecific abdominal pain makes it difficult to establish a firm clinical diagnosis of acute appendicitis. The differential diagnosis of abdominal pain in our environment is much broader than in the developed world.[16,17]

Diagnostic accuracy of acute appendicitis varies by sex with a range of 78-92% in male and 58-85% in females.[18,19] This implies that the diagnosis of acute appendicitis is more difficult in female because of gynecological lesions that may mimic acute appendicitis. This will usually lead to delay in diagnosis and increase the likelihood of complications. This may explain the higher complication rate in our female patients though there is no statistical significance in the stage of appendicitis between males and females (p = 0.058).

In this study the complication rate is strongly age related. In children less than 10 years of age at presentation, the complication rate was 83.3% and the patients older than 50 years of age, it was 100%. This is despite the fact that they constitute only 7.9% and 6.6% of the study population respectively.

Although appendicitis is rare in patients older than 50 years, all patients that presented with appendicitis presented with complicated appendicitis (n=5, p=0.001).

The diagnosis of acute appendicitis in these age groups requires a high index of suspicion to avoid undue delay.

Mortality in this study was 2.6% and these are not only patients with complicated appendicitis but also children.

CONCLUSION

Author present his experience with management of acute appendicitis in Cape Coast. The complication rate at presentation is unacceptably high with its attendant postoperative morbidity and mortality. A study to identify reason for this has commenced with the hope of finding a solution.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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