Nigerian Journal of Medical Practice
June 2006: Vol 9(1): 52 - 56

ACUTE APPENDICITIS IN OLABISI ONABANJO UNIVERSITY TEACHING HOSPITAL SAGAMU, A THREE YEAR REVIEW.

B.A. Ayoade, O.A.Olawoye, B.A.Salami *A.A.F. Banjo

*Department of Surgery Olabisi Onabanjo University Teaching Hospital P.M.B 2002 Sagamu, Ogun State Nigeria.**
Department of Morbid Anatomy Lagos State University Teaching Hospital Lagos

ABSTRACT:

Background: Olabisi Onabanjo University Teaching Hospital is located in Sagamu, a suburban town with a population of 50,000 (1992 census). The hospital is a tertiary care facility in competition with a large number of private hospitals with different levels of competence.

Objective: The objective of the study is to review the outcome of the surgical management of acute appendicitis in our hospital.

Method: A retrospective study of subjects who had appendectomy for the clinical diagnosis of acute appendicitis between January 2002 and December 2004 was done.

Result: 113 subjects consisting of 52 females (46%), and 61 males (54%) were studied. The mean age was 24.1 years, 71 subjects (62.9%) were in the 10-30 years range. 57.5% of the subjects were students and 71 subjects (62.8) resided in urban area. All the subjects, had generalized in 23.9%). The mean duration of symptoms was 3.53days with standard deviation of 3.69days. Only 3 subjects presented on the day of onset of symptoms. Only 15 subjects (13.3%) had surgery on the day of admission. 69subjects (61.1%) had uncomplicated inflamed appendix at surgery and 2subjects (1.8%) had clinically normal appendix. The mean duration of hospital stay was 10.6days with standard deviation of 7.4. The commonest postoperative complication was pyrexia in 16 subjects (14.2%), followed by wound infection in 12 subjects (10.6%). One subject died (0.9%).

Conclusion: The outcome reflects the late presentation and delay in surgical treatment.

Key words: Acute appendicitis, late presentation, hospital delay, outcome

INTRODUCTION

Acute appendicitis is one of the commonest abdominal surgical emergencies worldwide. [1] It is also one of the commonest cause of acute abdomen in our environment [2]The surgery is still faced with difficulty of making a confident diagnosis in a number of patients with this condition in spite of the recent methods of imaging such as ultrasonogrphy and computerized tomography [16] The incidence in Africa seems to be higher in the urban population than in rural dwellers [3]

MATERIAL AND METHODS

The case notes of all patients with clinical diagnosis of acute appendectomy from January 2002 to December 2004 in Olabisi Onabanjo University Teaching, Hospital, Sagamu were reviewed and the following parameters were noted: age, sex, occupation, address, symptoms, and its duration, signs, investigations, preoperative delay, operative findings, histological report, complications, period of hospital admission, and mortality. All the subjects had open appendectomy. A patient with clinical diagnosis of acute appendicitis or its complication but who were managed conservatively was excluded from the study. The analyses of the results were done by standard statistical methods.

Correspondences: Dr. B. A. Ayoade

RESULTS

Records of one hundred and thirteen subjects were analysed, 52 females (46.0%), 61 males (55.0%). The age range was 7years to 55years with a mean of 24.1yrs, standard deviation of +/- 10.5years. 36(31.9%) of the subjects were in the 20-30 years age range, 35(31.0%) were in the 10-20years age range, 2 (1.8%). were above 50years(Table 1). The occupations of the subjects were as follows: students (primary, secondary, tertiary institutions) 65 (57.5%), artisans 21 (18.6%), professionals (lawyers, doctors, engineers, teachers, etc.) 12 (10.6%), traders 13 (11.5%) in semi urban areas and 13 subjects (11.5%) resided in rural areas. All the subjects had abdominal pain, periumbilical pain with shift to right iliac fossa in 68 (60.2%), right iliac fossa pain in 45(39.8%) Nausea and vomiting were present in 63 (55.8%), fever in 36(31.9), anorexia in 35 (31.0%),

generalized abdominal tenderness in 27 (23.9%), rectal tenderness in 9 (8.0%). (Table 3) The WBC was above 10000 in only 21 (18.6%) subjects. The mean of the packed cell volume (PCV) was 37.3% with standard deviation of +/- 4.7. Plain abdominal x-ray was done in 19 subjects (26.8%), generalized bowel dilatation and multiple air fluid levels typical of paralytic ileus was present in 2 subjects Abdominopelvic ultrasound scan was done in 29sujects, 21 females and 8 males. The results were normal in 22 subjects (18 females, 2 males). Duration of symptoms in days ranged from 0 to 21, with mean of 3.53days and standard deviation +/-3.69days. Only 3 subjects presented on the day of onset of symptoms. 15(13.3%) subjects had surgery on the day of admission, 48(42.5%) subjects were operated upon 25hours after admission, 30(26.5%) subjects were operated upon 48hours after admission, 10(8.8%) subjects were operated upon 72hours after admission, and 10 (8.9%) subjects were operated upon at 90hours and above after admission. (Table 4) At surgery, 69(61.1%) subjects had uncomplicated inflamed appendix, 1(0.9%) subject had appendix mass, 23(20.4%) subjects had ruptured inflamed appendix with localized peritonitis and abscess, 14(12.4%) subjects had inflamed appendix with generalized peritonitis, 4(3.5%) subjects had inflamed appendix with pelvic peritonitis, 2(1.8%) subjects had clinically normal appendix. (Table 5). The duration of hospital stay ranged from 2 to 63days, with the mean of 10.6days, median of 8days, and standard deviation of +/-7.4days. The patient who was on admission for 63days had wound dehiscence, subphrenic abscess, and right lobar pneumonia. The complications observed were as follows: 16(14.2%) subjects had postoperative pyrexia, 12(10.6) had wound infection, 8(7.1%) subjects had other complication such as urinary tract infections, pneumonia, and paralytic ileus. (Table 6) Histopathological report was available for review in 41 (36.2%) subjects and all confirmed acute inflammation of the appendix. One subject died (0.9%) of multiple organ failure secondary to generalized peritonitis.

Table 1: **Age and Sex Distribution**

Age group (years)	Number	Percentage
0-10	11	9.7
11-20	35	31.0
21-30	36	31.9
31-40	21	18.6
41-50	8	7.1
51-6-	2	1.8
Sex	**Number**	**Percentage**
Male	61	54.0
Female	52	46.0

Table 2: **Occupation and Residential Address**

Occupation	Number	Percentage
Students	56	57.5
Artisans	21	18.8
Professionals	12	10.6
Traders	13	11.5
Farmers	2	1.8
Address	**Number**	**Percentage**
Urban	71	62.8
Semi-urban	29	25.7
Rural	13	11.5

Table 3: **Frequency of Symptoms and Signs**

Symptom	Frequency	Percentage
Abdominal pain	113	100
Periumbilical with shift to right iliac fossa	68	60.2
Right iliac fossa pain	45	39.8
Nausea and vomiting	63	55.8
Fever	36	31.9
Anorexia	35	31.0
Constipation	6	5.3
Diarrhora	6	5.3
Dysuria	4	4.5
Sign	**Frequency**	**Percentage**
Right iliac fossa tenderness	86	76.1
Generalised abdominal tenderness	27	23.9
Rectal tenderness	9	8.0

Table 4: **Duration of Hospital stay before surgery**

Period between admission and surgery (days)	Frequency	Percentage
0	15	13.3
1	48	42.5
2	30	26.5
3	10	8.8
4	5	4.4
5	1	0.9
7	3	2.7
8	1	0.9

Table 5 **Findings at Surgery**

Operative findings	Frequency	Percentage
Inflamed appendix	69	61
Appendix mass/Abscess	5	4.4
Ruptured	23	20.4
Gerereralised Peritonitis	14	12.4
Normal	2	1.8

Table 6: **Post operative Complications**

	Frequency	Percentage
Pyrexiz	16	14.2
Pelvic abscess	2	1.8
Wound infection	12	10.6
Subphrenic abscess	1	0.9
Wound dehiscence	1	0.9
Others	8	7.1

DISCUSSION

Reginald Fitz in 1886 gave the first accurate description of acute appendicitis, and advocated appendectomy as its treatment. [4] In spite of over a century experience and the high incidence of the condition, accurate diagnosis is still not reached by the surgeon in some patients. The surgeon is faced with possibility of ruptured appendicitis and its complication or the removal of a normal appendix as a result of abdominal pains caused by some other organ. Acute appendicitis is commonest in teens and twenties, and rare in the elderly and infants. [5] This was the finding in the study, 62.9% of the subjects were aged 11-30 years, only two subjects were aged above 50years and no subjects aged under 2 years. This is similar to the report of other workers. [2,6-9] Various reasons have been advanced for this trend such as relatively large lumen of the appendix in infants with better drainage, less prone to blockage, and relative atrophy with fibrosis of the appendix in the elderly. Appendicitis in the very young or elderly has a high morbidity and mortality due to late diagnosis as a result of different mode of clinical presentation. In addition the inflammation is poorly localized by the omentum which is poorly developed in children and atrophic in the elderly. [3] The male: female ratio was 1.1 :1 in this study; this is in conformity with the observation of others. [2, 6-9] Diagnosis of acute appendicitis in the female especially in the reproductive age may be confounded by disease of the ovaries and fallopian tubes. This account for the relatively higher incidence of negative appendectomy in the females. [17] Diagnostic laparoscopy is advocated to reduce the incidence of the negative appendectomy in females. [10] Majority of the subjects were students, artisans and professionals who reside in urban centers who are therefore likely to adopt western dietary habits which are relatively devoid of the typical high fiber diet of Africans as postulated by Burkitt. [11] This is similar to observation of other workers the incidence of the disease has been found to be higher in the urban population. [3] Abdominal pain which characteristically starts in the periumbilical area and shifts to the right iliac fossa is the cardinal symptom of acute appendicitis as observed in 60.2% of the subjects in this review. The pain was atypical in 39.8% Right iliac fossa tenderness was observed in 76.1% of the subjects and generalized abdominal tenderness in the rest and this could be due to late presentation with the onset of generalized peritonitis. The late presentation as observed in this study has been observed by other workers, [2,6-9] this may be due to self medication which patients first resort to. There is also the undue fear of surgical procedures. Leucocytosis with relative neutrophilia is a common observation in acute appendicitis in the western world but it was found in only 19.6% of our subjects, all of whom had complicated appendicitis. This is lower than 48% observed by Adekunle et. Al.[7] The WBC count is normally lower in our population this should be taken into consideration when interpreting the result of WBC count. [12] Although plain abdominal x-rays lacks both specificity and sensitivity in the diagnosis of acute appendicitis, they are sometimes necessary so as to rule out other causes of acute abdomen especially in the presence of generalised abdominal tenderness. [13] The subjects who had abnormal abdominal x-ray findings had typical findings of paralytic ileus. This is not unexpected in generalised peritonitis. Ultrasonography has been shown to improve the accuracy of diagnosis in patients with equivocal symptoms and signs of acute appendicitis. [14] In this review only seven subjects had abnormal ultrasound findings such as dilated appendix, with or without faecolith in three subjects, fluid collection in right iliac fossa and pouch of Douglas in four subjects. This may be due to the fact that the examination is highly operator dependent, was carried out using only abdominal probes and obsolete poor resolution equipment by different operators. Twenty of the 28 subjects who had ultrsonography were females in which the focus of the examination was to rule out gynaecological problem. A period of observation with regular review in cases where the diagnosis is not obvious is required. This reduces the negative appendectomy rate. [15] In this study only 13.3% of the subjects were operated upon on the day of admission, the rest were operated upon later. Some of the subjects required a period of observation for full evolution of the disease in the absence of facilities to carryout investigations such as ultrasound, computerized tomographic-scan and diagnostic laparoscopy. Some of the subjects had socio-economic difficulties which necessitated delay in operative treatment. This is in contrast to what is practiced in the developed world. Delay in treatment is associated with more complications of acute appendicitis as a result of rupture with peritonitis. The clinical diagnosis of acute appendicitis was confirmed at surgery in 11(98.2%) subjects with only two cases of clinical normal appendix (1.8%). The negative appendectomy rate in the 41 subjects whose histopathological reports were available for review was 0%. This is at variance with findings of others; rate varies 1.5-20% [2,6,7,9] The relatively low negative appendectomy rate may be due to a long period of observation before surgery leading to appearance of

unequivocal signs of acute appendicitis upon which a confident diagnosis could be made. This is at the expense of incurring a high incidence of rupture in 2 3(20.4%) subjects, generalised peritonitis in 14 (12.4%) subjects, and appendix mass/ abscess in 5(4.4.%) subjects.

The commonest postoperative complication was pyrexia in 16 subjects (14.2%) This is not unexpected as 36.3% of the subjects already had perforated appendix with peritonitis. Also malaria is endemic here and all patients responded to empirical treatment with anti-malarial drugs and antibiotics. 10.6% of the subjects had wound infection; this is low in contrast to reports by other workers in our country. [2,6,7] This may be due to the policy of copious irrigation of all wounds and delayed primary closure of wounds in subjects with ruptured appendicitis in addition to use of antibiotics in management of these patients. Acute appendicitis especially when ruptured may be complicated by residual intra-abdominal abscesses, as observed in two subjects (1.8%) who had pelvic abscesses and one subject with subphrenic abscess in this study, and prompt drainage is required. Frequent mucoid stools with swinging pyrexia and fullness of pouch of Douglass on rectal examination are the hallmarks of a pelvic abscess. The mean duration of hospital admission was longer than observed in western communities but it is comparable with the observation of other workers in our locality. [18] This reflects the late presentation with the associated onset of complications and the preoperative hospital delays. Histological examination of the appendix specimens in 41 subjects revealed only acute inflammation without association with parasites as observed by other workers. [2,6] The mortality from acute appendicitis is now very low all over the world, [19] however occasional deaths occur in complicated cases like in the subject who died in this review. The subject had generalised peritonitis and subsequent multiple organ failure.

CONCLUSION

Acute appendendicitis is common in our locality, the presentation and outcome is not different from the observation of other workers in the developing world. However there is still significant morbidity on account of late presentation. Intensive public awareness campaign on the need to seek medical attention as soon as symptoms appear would go along way in reducing morbidity and mortality from acute appendicitis and its complications.

REFERENCES:

1. **Elis H.** Appendicitis. Postgraduate Doctor (Africa) 1989. 10:122-7
2. **Ajao OG.** Appendenicitis in a Tropical African population. Journal National Medical Association 1979: 7: 997-999
3. **Naaeder SB.** The Appendix in Princples and pravtice of surgery including pathology in the tropics 3rd ed. Edited by Badoe EA, Archampong EQ, da Rocha- Afodu JT (20000) © Dept of Surgery, University of Ghana Medical School p519
4. **Fitz R.** Perforating inflammation of the vermiform appendix with special reference to early diagnosis and treatment. Am J Med 1886; 92:321
5. **O'Connell. P.R.**Vermiform Appendix in Bailey & Love's short Practice of Surgery 23rd edition, R.C.G. Russell, N.S.Williams, C.J.K Bulstrode Editors. (2000). Arnold, London. P1078
6. **Adesunkanmi A.R.K, Agbakwuru E.A, Adelusola K.A.** Pattern and outcome in semi-urban African communities: A study of 125 patients. Nigerian Medical Practitioner 36.(1/2) 1998 p8-11
7. **Adekumle OO and Funmiloyo JA.** Acute Appendicitis in Nigeria. J. Roy. Coll Surg Edinb 1986; 31: (2): 102-105.
8. **Otu AA** Tropical surgical abdominal emergencies: acute appendicitis. Trop Geogr Med.1989 Apr; 41(2): 118-22
9. **Madiba TE, Haffejee AA, Mbete DL, Chaithram H, John J.** Appendicitis among African patient at King Edward VIII Hospital, Durban, South African: a review. East Afr Med J. 1998; 75(2): 81-4
10. **Sauerland S, Lefering R, Neugebauer EA.** Laparoscopic versus open surgery for suspected appendicitis. Cochrane Database Syst Rev 2002; CD001546.
11. **Burkitt, D.** (1971): The aetiology of appendicitis Br. J. Surg. 58695-699.
12. **Ezeilo GC:** white cell counts in healthy Africans. Nigerian Medical Practitioner 1982. 2(5/6): 73-78
13. **Brazaitis MP, Dachran PH.** The radiological evaluation of acute abdominal pain of intestinal origin. Med. Clin North Am.1993; 77:939-972
14. **Douglas CD, Macpherson NE, Davidson PM, Gani JS.** Randomised controlled trial of ultrasonography in diagnosis of acute appendicitis incorporating the Alvarado score. BMJ. 2000; 321: 1-7

15. Jones PF. Suspected acute appendicitis: trends in management over 30 years. Br J Surg 2001; 88: 1570-1577

16. **Lee SL, Walsh AJ, Ho HS.** Computed tomography and ultrasonography do not improve and may delay diagnosis and treatment of acute appendicitis. Arch Surg. 2001 May; 136(5): 556-62

17. **Borgstein PJ,Gordiji RV, Eijsbouts QAJ, Cuesta MA.** Acute appendicitis- a clear cut case in men, a guessing game in young women. Surg Endosc (19970 11: 923-927

18. **Davies GM, Dasbach EJ, Teutsch S.** The burden of appendicitis- related hospitalization in United States in 1997. Surg Infect (Larchmt). 2004 Summer; 5(2): 160-5

19. **Hale DA, Molloy M, Pearl RH, Schutt DC, Jaques DP.** Appendectomy: a contemporary appraisal . Ann Surg. 1997 Mar; 225(3) : 252-61