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Original Research Article

Incidence and prevalence of acute appendicitis at Khartoum North teaching hospital from March 2013-November 2015

Ibrahim Salih Elkheir [1], Sarah M Ahmed [2], Fatima Saida Ahmed Yassin [3]

[1] Associate professor of paediatric surgery at Alzaiem Alazhari University, Khartoum North teaching hospital, Sudan
[2]Assistant professor, department of general surgery, Nile Collage, Albaan Gadeed hospital, Sudan
[3]House-officer, department of paediatric surgery, Khartoum North teaching hospital, Sudan

***Corresponding author**
Sarah M Ahmed
Email: sarah.m.ahmed@hotmail.com

Abstract: Acute appendicitis is one of the most common diagnoses in the emergency department in pediatric patients. The aim of the study is to measure the incidence and prevalence of acute appendicitis at Khartoum north teaching hospital pediatric surgical department. Our study included patients who were admitted to pediatric emergency department at Khartoum north teaching hospital who diagnosed with acute appendicitis both male and female, recording their presenting symptoms and signs, operative findings, complications of acute appendicitis and hospital stay. Among 142 patients, male gender was predominant (n=87)61.3% and female was (n=55)38.7%, with the mean age of study group 10.1±7.95, male to female ratio was 1.5:1. The common age group of presentation was 10 years of age (n=32) 22.5%. Common complications of acute appendicitis were appendicular mass (n=77) 54.2% and perforated appendix (n=27) 19.1%. The most common site of the appendix intra-operatively was Retrocaecal (n=105) 73.9% and most common complications intra-operatively was Caecal injury (n=2)1.4%. Acute appendicitis is the most common presenting diagnosis in pediatric patients in which the diagnosis was reached clinically and the risk of complications increases whenever the duration of symptoms increases.
Keywords:acute appendicitis, pediatric patients, clinical symptoms and signs, diagnosis of acute appendicitis, complications of acute appendicitis

INTRODUCTION:

Abdominal pain is one of the most common presenting symptoms of children brought to medical attention. Etiologies of abdominal pain in children range from simple causes (e.g., constipation) to potentially catastrophic ones (e.g., malrotation with midgut volvulus) Distinguishing appendicitis from other disorders is difficult [1].

Acute appendicitis AA occurs in almost all age-groups and is particularly difficult to diagnose in its early stage in infants and toddlers. The lifetime risk of developing appendicitis is approximately 9% in males and 7% in females. Approximately 30-75% of children present with perforation, especially in younger children (<5 years) [1].

The diagnosis of AA is challenging specially in the paediatric population, due to potential atypical clinical presentation in this age group, non-specific clinical symptoms and also a wide range of differential diagnoses [1]. The initial misdiagnosis rate for appendicitis range from 28% to 57% for older children and may reach up to 100% for those 2 years or younger, despite clinical history, physical examination and diagnostic armamentarium including total leucocytes count (TLC), C-reactive protein (CRP), ultrasound, computed axial tomography scan and magnetic resonance imaging [1].

Common complications of acute appendicitis include: localized peritonitis and abscess formation, flegmon and general peritonitis [1]. Which are infectious in nature? While much has been written in the literature about appendicitis and the management of acute appendicitis is well described[1]. Controversy remains as to the optimal treatment of complicated appendicitis[2].

PATIENTS AND METHODS:

A retrospective cross-sectional study in the paediatric surgery department at Bhari Teaching

Hospital during the period of March 2013-November 2015.

Patients from the age of three years to18 years were included.Data collection sheet was filled from the admission files, which including, age gender presenting symptoms including shifted right iliac fossa pain, anorexia, nausea and vomiting, dysurea and diarrhea. Signs on physical examination which includes general look of the patient, pyrexia, tenderness and rebound tenderness, guarding, Psoas and Obturator signs, Intra-operative finding asking about the site and state of the appendix type of incision they use presence or abscence of localized or generalized peritonitis, whether they have to put a drain or not, post-operative course and complications and hospital stay.Data analysed using SPSS 20 comparison was made by using Chi square test.

RESULTS:

During the study period 176 patients evaluated, 34 of them were excluded as their data was incomplete. Male gender was predominant accounting for (n=87) 61.3%, female was (n=55) 38.7%, with the mean age of the study group 10.1±7.95, male to female ratio 1.5:1. Common age group was 10 years of age (n=32) 22.5% followed by 12 years of age (n=25) 17.6%, while both nine and 11 years of age shared the same number (n=23) 16.2%. The youngest age group in the study was 3 years of age (n=2) 1.4% and the oldest age group was 18 years of age (n=1) 0.7%.

Duration of symptoms vary, the majority of patient had their symptoms for 2-3 days (n=49) 34% , and those who had their symptoms for one day or more than seven days share the number of patients (n=31) 21.8%. When we test the correlation of the duration of symptoms with the complicated acute appendicitis we found that patients who diagnosed with gangrenous appendix and formation of mass had a significant P value 0.026 and 0.000 respectively.

Table 1: patients with complicated appendicitis (n=142)

	Frequency	Percent %
Appendicular mass	77	54.2
Perforated appendix	27	19.1
Appendicular abscess	13	9.2
Peritonitis	5	3.5
Gangrenous appendix	2	1.4
Total	**124**	**87.4**

From the total of 77 patients who had Appendicular mass, (n=45) 31.7% operated with elective appendectomy and the rest of the patients (n=29) were never operated and never showed up.

Regarding the symptoms all the patients present with right iliac fossa pain (n=142) 100%, while (n=115) 81.0% from the total number had the character of shifting pain, nausea and vomiting found in (n=108) 76.1% and anorexia in (n=71) 50.0%.The most common sign that encountered was right iliac fossa tenderness (n=134) 94.4%, and the other signs where shown in Table 2.

Table 2: Signs in patients with acute appendicitis (n=142)

Signs	Frequency	Percent
General look (ill)	131	92.3%
Pyrexia	75	52.8%
RIF tenderness	134	94.4%
Rebound tenderness	61	43.0%
Guarding	24	16.9%
Generalized tenderness	2	1.4%
Rovsing's sign	6	4.2%
Psoas's sign	7	4.9%
Obturator sign	3	2.1%
Suprapupic tenderness	1	0.7%

Regarding the general examination (n=71)50.0% had fever, right iliac fossa tenderness (n=134) 94.4% and only (n=61) 43.0% had rebound tenderness.Options of treatment were categorized into three, patients who underwent emergency appendectomy (n=71) 50.0%, patient who underwent elective appendectomy (n=45) 31.7%, and patient who treated conservatively and never been operated (n=26) 18.3%.

Total number of operated patients was (n=116) 81.6%, the majority of them operated with Gridiron incision were (n=89) 60.6%, while Lanz incision done on (n=14) 9.9%, lower midline incision in (n=8) 5.6% and right paramedian in (n=6) 4.2%. When we test the correlation we found it significance with perforated appendix, abscess formation, appendicular mass, post-operative complications and hospital stay with P value of 0.030, 0.000, 0.026, 0.032 and 0.000 respectively. The common site for appendix found intra-operatively was Retrocaecal (n=105) 73.9% followed by retro-ileal (n=4) 2.8%.

Total number of operated patients is (n=116) 81.6%, and the most common site of the appendix was found Retrocaecal (n=105) 73.9%, and perforated appendix were found in (n=27) 23.2% and from those (n=19%) were perforated at the tip. Appendicular mass was diagnosed pre-operatively clinically or by ultrasounds in (n=77) 45.2% some times in difficult cases they diagnosed with examination under general Anaesthesia (EUA).The complications were encountered were shown in (Table 3) below.

Table 3: Post-operative complications (n=142)

Post-operative complications	Frequency	Percent
Caecal injury	2	1.4%
Surgical site infection	1	0.7%
Pelvic collection	1	0.7%
Enterocutaneous fistula	1	0.7%
Total	**5**	**3.5%**

DISCUSSION:

Appendicitis is the most common abdominal emergency and accounts for more than 40 000 hospital admissions in England every year [1]. In our study the most common age group was 10 years (n=32) 22.5% followed by 12 years (n=25) 17.6%, while both nine and 11 showed the same number of patients (n=23) 16.2%, and this is match the literature in which Appendicitis is most common between the ages of 10 and 20 years, but no age is exempt [2].

Diagnosis of simple acute appendicitis was clinically with the right iliac fossa pain that found in all patients (n=142) 100% while shifting was in 115 from the total and anorexia in (n=71) 50.0%, and those results were similar to that done by Mike Hardin [5], right iliac fossa tenderness was found in (n=134) 94.4%, rebound tenderness in (n=61) 43.0% and pyrexia only in (n=75) 52.8%.

Appendix had many different anatomical sites, in our study we found that Retrocaecal appendix is the most frequent site (n=105) 73.9%. Complicated acute appendicitis was diagnosed in (n=134) 94.3% and in those the most frequent was appendicular mass (n=77) 45.2% which diagnosed either clinically or radiologically using ultrasound, or these incidence were much higher than reported in Nigeria [2]. 2%-6% this may be attributed to late presentation of the patients, from those (n=45) 31.6% were operated electively and this was found to be a safe approach for those patients with no significant post-operative complications[10].

Most of the operated patients were stayed at hospital for 2-3 days (n=56)39.4% and only (n=13) 9.2% stayed at hospital for more than seven days. And this is correlated with those who diagnosed with perforated appendix and appendicular abscess with P value of 0.014 and 0.00 respectively.

CONCLUSION:

Acute appendicitis is one of the most common of acute abdomen in paediatric patients, in which the diagnosis is solely clinical, and risk of complications increases whenever the duration of symptoms increase especially appendicular abscess.

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