

ACUTE APPENDICITIS IN CHILDREN

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ABSTRACT

Objectives To analyze the various presentations and complications of acute appendicitis in children.

Study design Descriptive study

Place & Duration of study Department of Paediatric Surgery, Peoples Medical College Hospital Nawab Shah, from January 2006 to October 2008.

Patients and Methods All those patients who presented with symptoms and signs of acute appendicitis and underwent surgery and those who had laparotomy and were found to have perforated appendix were included in the study.

Results A total of 58 patients were operated from January 2006 to October 2008. Forty-two patients were males and 16 females. The age of patients ranged from 3 to 14 years. Majority of our patients presented with pain in abdomen (57 patients) along with anorexia (50 patients). Twenty-three patients presented with classical symptoms and signs of acute appendicitis. Three patients presented with appendicular lump, 3 with perforated appendix, 3 with generalized peritonitis and 2 with intestinal obstruction. All patients underwent open appendicectomy. Thirty-one (53.44%) were simple acute appendicitis and 26 (44.82%) were found complicated. Eighteen (31.03%) patients developed wound infection / dehiscence.

Conclusions Appendicitis is the common surgical emergency in children. Diagnosis is mainly clinical. Delay in diagnosis and proper treatment increases morbidity. Wound infection and wound dehiscence are common complications.

Key words Children, Appendicitis, Appendicectomy. Wound Infection.

INTRODUCTION:

Acute appendicitis is the most common surgical condition of the abdomen and should be included in the differential diagnosis of every patient presenting with acute abdominal pain.^{1,2} About 250,000 cases of appendicitis are diagnosed and treated in US annually.³ Appendicitis has a male to

female ratio of 3:2 and is most common in the teens and twenties. The life time risk for appendicitis is 8.6% for males and 6.7% for females. Appendicitis is less frequent in third-world countries.⁴

Patients with acute appendicitis present with abdominal starting in periumbilical area and then shifting to right iliac fossa. It is associated with nausea, vomiting, anorexia and sometimes with low grade fever. Diagnosis is mainly clinical.⁵ To improve clinical diagnostic accuracy and to reduce the rate of negative appendectomy clinical scoring system like Alvarado score has been used.^{6,7}

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The complications of appendicitis include appendicular perforation, appendicular mass, appendicular abscess, gangrene of appendix with perforation resulting in peritonitis, portal pyemia leading to liver abscess and intestinal obstruction. Once appendicitis has resulted in complication, the morbidity increases and in some cases it may even prove fatal.

Paediatric data on acute appendicitis from Pakistan is not very comprehensive. Children also differ in clinical presentation from that of adults as their description of symptoms is dependent more on family rather than patients themselves. As age group differs even in paediatric patients it becomes even more important for the paediatric surgeon to make early and appropriate diagnosis so that resultant complications can be avoided. This study was undertaken in hospital where most of the patients are brought from rural areas. The aim of the study was to analyze different presentations and complications of acute appendicitis in children.

PATIENTS AND METHODS:

This descriptive study was conducted at Department of Paediatric Surgery, Peoples Medical College Hospital Nawabshah, from January 2006 to October 2008 to document various presentations and complications of acute appendicitis. Files of patients were reviewed retrospectively. All patients who presented with symptoms and signs of acute appendicitis as well as those patients who presented with symptoms and signs of peritonitis or intestinal obstruction and were found on laparotomy to have perforated appendix, were included in the study. Suspected cases of appendicitis that were managed conservatively were excluded.

The patients were assessed and operated on by two surgeons individually. All the patients were given pre operative intravenous fluids and antibiotics covering aerobic and anaerobic bacteria. All patients underwent open appendicectomy. Peritoneal cavity was washed with normal saline and drain kept in complicated cases. In grossly contaminated cases wound was left open and closed by secondary suturing.

RESULTS:

A total of 58 patients were managed. Forty-two (72.41%) were males and 16 (27.59%) females, with M:F ratio of 2.62:1. Three (5.17%) patients were < 5 years of age, 32 (55.17%) between the age of 5 to 10 years and 23 (39.65%) between age of 11 to 14 years. Twenty-three (39.65%) patients presented with classical symptoms and signs of acute appendicitis. Pain in abdomen was the main symptom which occurred in 57 (98.27%) patients, among them 33 (57.9%) patients had localized pain in right iliac fossa, 17 had vague central pain while 6 patients had pain in whole of abdomen. One patient presented

with recurrent abdominal pain. Next common symptom was anorexia which occurred in 50 (86.20%) patients. Vomiting occurred in 40 (68.96%) and fever in 25 (43.10%) patients.

Three patients presented with appendicular mass. Five patients presented with symptoms and signs of generalized peritonitis or intestinal obstruction and were found to have perforated appendix. In 57 (98.27%) patients tenderness could be elicited. Among them 50 were tender at right lower abdomen while 7 were tender all over abdomen.

Complete blood count (CBC) was done in 30 patients, while in 8 patients only Hb% was done. Sixteen out of 30 (53.33%) patients had leucocytosis, while in 14 (46.66%) CBC was within normal range. Ultrasound examination of abdomen was performed in 42 patients, 18 out of these already had ultrasound done from outside. In 26 (61.90%) patients finding were suggestive of appendicitis i.e. an echogenic, elongated, thick walled appendix with periappendicular collection. In 5 patient appendicular lump/ mass and in 3 perforated appendix was diagnosed on sonography. Plain abdominal radiograph was advised in suspected cases of intestinal obstruction and peritonitis or was advised by junior doctor on duty. Twenty patients had abdominal radiograph done of which 5(25%) radiographs revealed localized ileus with obliteration of psoas shadow. Seven (35%) radiographs showed dilated loops of intestine with multiple air fluid levels and one showed shadow of faecolith.

At operation 31 (53.44%) patients were found to have simple appendicitis and 26 (44.82%) complicated appendicitis i.e. perforated and gangrenous. Pus around appendix and pelvis was found in 27 (46.55%) cases and 7 appendices found to contain faecolith. One patient had normal appendix, however there were adhesions around appendix suggestive of old inflammation.

Post operatively 18 (31.03%) patients developed wound infection among them 7 developed dehiscence. One patient developed faecal fistula and wound dehiscence and on exploration base of caecum was found sloughed. There was no mortality in the series. The hospital stay ranged from 03 days to 30days with an average of 11.69 days.

DISCUSSION:

Acute appendicitis is a clinical condition which needs surgical treatment as soon as possible, if ignored it may get complicated and increase the morbidity and mortality.⁸ Ages of majority of our cases were between 5 and 10 years, which correlates with national and international literature.^{2,9} Male to female ratio has been reported to be 3:2.³ One local study has reported male to female ratio

of 4:1 while in our series male female ratio was 2.6:1. Abdominal pain is the most common symptom of appendicitis, which was present in 57(98.27%) patients. Mughal and Soomro have noted pain in 66.7% of patients.² Typical migratory pain is seen in only half of adult patients, and even less commonly in children.¹⁰ Majority (57.9%) of our patients had localized pain in right lower quadrant of abdomen. Pain involves whole abdomen when there is perforation leading to peritonitis.¹¹ This was also true in this series. Anorexia is an important and prevalent symptom in acute appendicitis, which occurred in 50(86.20%) of our patients. Salari and Binesh have reported anorexia in 84.48% in pediatric age group.⁵

Acute appendicitis is a clinical diagnosis and no laboratory or radiological tests are 100% accurate.¹² Mild leucocytosis, ranging from 10,000 to 18,000 is usually present in patients with acute appendicitis. In 30 patients CBC was done in this study of which in 16 (53.33%) TLC and neutrophil count were found elevated. Mughal and Soomro have found TLC and neutrophil count to be elevated in all of their patients.² Ultrasound examination of abdomen and pelvis are usually not recommended in acute appendicitis. In equivocal and difficult cases ultrasound examination can be done.^{6,13} In 42 of our cases ultrasound was performed. In only 6 patients ultrasound examination was normal or appendix was not visualized, in rest 36 patients ultrasound findings were suggestive of acute appendicitis, perforated appendix, appendicular lump and sub acute intestinal obstruction. However Mardan et al have concluded that addition of routine ultrasound by graded compression technique can improve diagnostic accuracy.¹⁴

Recently there is great enthusiasm for laparoscopic appendectomy. Open appendectomy has been the standard treatment for decades with excellent results for more than a century since its introduction by McBurney in 1894.^{15,16,17} Open appendectomy was performed through right transverse lower quadrant incision in all, but 5 cases of peritonitis/ intestinal obstruction, in whom perforated appendix was found. Laparotomy was performed through supraumbilical transverse incision. At operation we found in 31 (53.44%) patients with simple appendicitis and in 26 (44.82%) complicated appendicitis, which is similar to observations by Mughal and Soomro.²

In literature the rate of perforated and gangrenous appendicitis has been quoted as 16-57%.^{11,18} Post operative wound infection is the most common complication of appendicitis and it ranges from 5-50%.¹⁹ Eighteen (31.03%) of our patients developed wound infection and dehiscence, among them 7 patients had wound dehiscence, while Mughal and Soomro observed wound infection in 16.66% of their patients. Post operative intestinal obstruction has been reported in 3.33% of

patients. We did not have proper long term follow up, so we could not conclude regarding rate of development of post operative intestinal obstruction. There was no mortality in this series.

CONCLUSION:

Appendicitis is the common surgical emergency in children. Diagnosis is mainly clinical. Delay in diagnosis and improper treatment increases morbidity.

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