

A study on appendicitis and etiology of non-specific abdominal pain in childrens

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Abstract

Abdominal pain is one of the most common painful health condition in school-aged children. In a developing country like India, patients tend to present late in the disease course, which in turn may lead to poor outcome. The pathology of abdominal pain is complex and does not let itself to a single cause. The 50 patients having the symptoms of the abdominal pain were enrolled in this study. It was found that most of the children with acute abdominal pain would not require surgery. Detailed history and thorough physical examination are important factor of the diagnosis. Parent delay and doctor delay were confirmed as contributing factors in the delayed diagnosis of appendicitis in younger children, which may explain the higher rate of complicated appendicitis in study group. More studies, including prospective studies, of children with suspected appendicitis are needed, especially with a focus on younger children.

Keywords: acute abdominal pain, surgical abdomen, non-specific pain etc

Introduction

Abdominal pain is perhaps the most common painful health problem in school-aged children. J Apley, a British pediatrician, studied abdominal pain among children extensively and observed that approximately 10% of school aged children get recurrent episodes of abdominal pain. He named this symptom complex as recurrent abdominal pain (RAP) syndrome and defined it as “at least three episodes of abdominal pain, severe enough to affect their activities over a period longer than three months” [1]. His findings formed the main guidelines for the practising pediatricians and researchers dealing with this problem. Even though, the term chronic is used when referring to RAP, each episode of pain is distinct and separated by periods of wellbeing.

It is generally agreed that the complaint of pain made by children with RAP is genuine, and not simply social modelling, imitation of parental pain, or a means to avoid an unwanted experience (e.g. school phobia). The commonest presentation is periumbilical pain associated with autonomic and functional symptoms like nausea, vomiting, pallor and other painful conditions like headache and limb pains [2, 3]. Thus on initial presentation, RAP may mimic any acute abdominal disorder, and may prompt extensive evaluation and unnecessary invasive investigation. Often there is a family history of RAP among first-degree relatives. This may be due to genetic or environment vulnerability and further studies are needed to detect a definite genetic predisposition [4].

The origin of abdominal pain is complex and does not lend

itself to a single model of causation. Apley and Naish suggested that organic pathology cannot be identified in 90% of children suffering from this problem. During the last half century, new diagnostic methods have broadened the investigation of these children, and have contributed to improved knowledge of the pathophysiology of RAP. In some of the subsequent studies, the percentage of children with organic RAP was found to be higher than initially reported by Apley [1,5]. The majority of these studies were carried out in secondary and tertiary care hospitals where patients were highly selected and it was therefore more likely that an organic pathology was found. In some of these studies, the percentage of organic RAP was found to be as high as 82% [5].

Appendicitis is inflammation of the appendix. Symptoms commonly include right lower abdominal pain, nausea, vomiting, and decreased appetite. However, approximately 40% of people do not have these typical symptoms [6]. Severe complications of a ruptured appendix include widespread, painful inflammation of the inner lining of the abdominal wall and sepsis [7]. Appendicitis is caused by a blockage of the hollow portion of the appendix. Inflamed lymphoid tissue from a viral infection, parasites, gallstone, or tumors may also cause the blockage. This blockage leads to increased pressures in the appendix, decreased blood flow to the tissues of the appendix, and bacterial growth inside the appendix causing inflammation. If this process is left untreated, the appendix may burst, releasing bacteria into the abdominal cavity, leading to increased complications [8].

Table 1: Causes of Recurrent Abdominal Pain

	Emergencies	Other Causes
Medical Causes	Diabetic Ketoacidosis Inflammatory bowel disease (rare)	Gastroenteritis Constipation Mesenteric lymphadenitis Urinary tract infection

Surgical Causes	Appendicitis Bowel obstruction Trauma Incarcerated hernia Peritonitis Testicular torsion Renal obstruction/stones	
Drugs/ Toxins	Accidental or self-harm ingestion	
Referred Pain		Pneumonia
Unknown aetiology		Infantile colic Functional bowel dise
Rare Causes		Angioneurotic oedema Familial Mediterranean fever Hepatitis Gall Stones Pancreatitis Sickle cell anaemia Peptic ulcer disease Concealed pregnancy Inflammatory bowel disease Irritable bowel syndrome

The diagnosis of appendicitis is largely based on the person's signs and symptoms. In cases where the diagnosis is unclear, close observation, medical imaging, and laboratory tests can be helpful. The two most common imaging tests used are an ultrasound and computed tomography (CT scan). CT scan has been shown to be more accurate than ultrasound in detecting acute appendicitis. However, ultrasound may be preferred as the first imaging test in children and pregnant women because of the risks associated with radiation exposure from CT scans [9].

In a developing country like India, patients tend to present late in the disease course, which in turn may lead to poor outcome.

Limited data are available in the literature on this issue from India. On the other hand, it is commonly experienced by surgeons working in India that there is a substantial delay from onset of symptoms to hospital admission in patients with surgical acute abdomen. We aimed to analyse the time period from clinical onset of acute abdomen to admission to our institute to identify factors that may lead to a delayed presentation.

Material and method

The study was planned in Upgraded Department of Paediatrics in the Patna Medical College and Hospital, Patna from Nov 2012 to Oct 2013. The 50 patients having the symptoms of the abdominal pain were enrolled in this study. The approval of the institutional ethics committee was taken before starting the study.

We excluded patients with a history of trauma. Data collected by interviewing patients and their family members, and by extracting information from medical records, were entered in a proforma.

Results and Discussion

The data from the 50 patients having the symptoms of the abdominal pain were collected and presented as below.

Table 2: Age & Sex of Patients

Age	Number of Cases
2 – 5 years	7
5 – 9 years	35
9 -14 years	8
Total	50
Sex	
Girl	34
Boys	16
Total	50

Table 3: Cause of Abdominal Pain

Age	Number of Cases
Acute Appendicitis	21
Non-Specific Abdominal Pain	13
Miscellaneous:	16
▪ Constipation	5
▪ Gastroenteritis	2
▪ Urinary tract infection	2
▪ Acute pancreatitis	2
▪ Cholecystitis	1
▪ Choledochal Cyst	1
▪ Other	3
Total	50

Table 3: Signs & Symptoms in Observed Patients

	Acute appendicitis	Non-Specific pain abdomen	Miscellaneous
Total Cases	21	13	16
Anorexia	14	5	6
Vomiting	15	6	9
Burning micturition	2	1	2
Constipation	3	2	3
Diarrhoea	1	2	4
Guarding	17	1	3
Tenderness at right iliac fossa	18	6	5
Rebound tenderness	19	2	3
Pain right lowerquadrant	18	7	2
Fever	17	2	4

The diagnosis of acute appendicitis is considered to be

especially challenging in children due to difficulties in communication and examination. There are several studies reporting difficulties in diagnosing appendicitis in younger children. The diagnostic difficulties result in increased risks of both negative appendectomies and a delayed diagnosis, both leading to increased morbidity, more complications, longer hospital stay, and higher costs.

Acute abdominal pain in children presents a diagnostic dilemma to the treating physician. The main source of debate and controversy is whether the patient has a problem requiring surgery. Abdominal pain in children may be caused by numerous disorders^[10]. The most common medical cause is gastroenteritis and the most common surgical cause is appendicitis^[11]. A careful history and physical examination, together with a small number of selected laboratory studies, provide a rational basis for effective management in most of the cases. The present study was conducted to know common discharge diagnosis in patients presenting with acute abdominal pain and in particular discriminative value of clinical features in establishing the diagnosis.

Caperell and colleagues studied racial differences for outcome of acute abdominal pain in children^[12]. They noted that appendicitis was more common in whites than African-Americans. In African-Americans constipation was more common. The cause of acute abdominal pain in more than 25% of children, in their study was constipation. Constipation was third most common diagnosis in our study, noted in 7.2% of the patients. Difference in the incidence of constipation may be due to different eating habits, with use of fibre rich diet in our population. The diagnosis of constipation was made by thorough history and complete physical examination (including rectal examination where required), with or without plain abdominal radiograph. Erkan et al from Turkey reported constipation in 9% of their patients^[13].

Reynolds and Jaffe in their prospective study looking at the causes of acute abdominal pain in children reported that 36% children had non-specific pain abdomen, 8 % had appendicitis and 7% had constipation^[14].

Anorexia, fever, pain in right lower quadrant, tenderness in right iliac fossa, involuntary guarding, rebound tenderness and tachycardia were all significantly higher in our patients with appendicitis. Similar findings were noted by other researchers^[15].

The two other parameters contributed to the diffuse clinical picture in the younger children: 85% of these children sought medical care with abdominal pain as the main complaint and were triaged as acute abdomen when compared with older children. Younger children with appendicitis who are not triaged as acute abdomen has been described by others as well^[16].

This result is in concordance with other studies, and it may confuse the clinical picture and mislead the surgeon. The fact that parent delay and doctor delay contribute to the late diagnosis of appendicitis in younger children was confirmed in our present study^[17, 18]. Younger children associated with a doctor delay were presumed to have another specific diagnosis and not unspecific abdominal pain. This finding stresses the diffuse clinical picture that young children with appendicitis may present.

Conclusion

Hence from the above data it can be concluded that the most

of the children with acute abdominal pain would not require surgery. Detailed history and thorough physical examination are important factor of the diagnosis. Parent delay and doctor delay were confirmed as contributing factors in the delayed diagnosis of appendicitis in younger children, which may explain the higher rate of complicated appendicitis in study group. More studies, including prospective studies, of children with suspected appendicitis are needed, especially with a focus on younger children.

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