International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsciencejournal.com
Volume 4; Issue 9; September 2018; Page No. 150-153

Evaluation of appendicitis pain and non-specific abdominal pain in children

Dr. Ramanuj Sharma[1], Dr. Chhitiz Anand[2*], Dr. JPN Barnwal[3]
[1] Junior Resident, Upgraded Department of Paediatrics, Patna Medical College and Hospital, Patna, Bihar, India
[2] Junior Resident, Department of Paediatrics, Darbhanga Medical college and Hospital, Laheriasarai, Darbhanga, Bihar, India
[3] Department of Paediatrics, Patna Medical College and Hospital, Patna, Bihar, India
[*] Corresponding Author: Dr. Chhitiz Anand

Abstract
Abdominal pain is perhaps the most common painful health problem 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 origin of abdominal pain is complex and does not lend itself to a single model of causation.
The study was planned in Upgraded Department of Paediatrics in Patna Medical College and Hospital, Patna from November 2013 to October 2014. 50 patients having symptoms of the abdominal pain were enrolled in the present study.
Through our study, it can be concluded that most of the children with acute abdominal pain would not require surgery. Detailed history and thorough physical examination are important factors in determining 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

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. Similar associations have been found in functional bowel disorders causing abdominal pain, like irritable bowel syndrome. 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. This is most commonly due to a calcified "stone" made of feces. 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. The combination of inflammation, reduced

blood flow to the appendix and distention of the appendix causes tissue injury and tissue death. 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 disease
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

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.

Methodology

The study was planned in Upgraded Department of Paediatrics in Patna Medical college and Hospital, Patna From November 2013 to October 2014 .50 patients having the symptoms of the abdominal pain were enrolled in the present study.

The approval of the institutional ethics committee was taken before starting the study. We excluded patients with a history of trauma. Data was collected by interviewing patients and their family members, and by extracting information from medical records, were entered in a proforma. The information included demographic details such as name, age, sex, occupation, education, etc.

Results & 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 lower quadrant	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 fiber 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 NSPA, 8 % had appendicitis and 7% had constipation [14]. We based our diagnosis of acute appendicitis on history and repeated physical examination.

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 fndings 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]. Furthermore, even when excluding those with appendicle abscesses, younger patients still had a higher frequency of diarrhoea than older patients.

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 most of the children with acute abdominal pain would not require surgery. Detailed history and thorough physical examination are important factors in determining 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.

References

1. Apley J, Naish N. Recurrent abdominal pain: A field survey of 1000 school children. Arch Dis Child. 1958; 33:165-170.
2. Rasul CH, Khan MAD. Recurrent abdominal pain in school children in Bangladesh. J Ceylon CollPhys. 2000; 33:110-114.
3. Devanarayana NM, de Silva DGH, de Silva HJ. Recurrent abdominal pain syndrome in a cohort of Sri Lankan children and adolescents. J Trop Pediatr. 2008; 54:178-183.
4. Pace F, Zuin G, Di Gianomo S, Molteni P, Casini V, Fontana M, *et al*. Family history of irritable bowel syndrome is the major determinant of persistent abdominal complaints in young adults with a history of pediatric recurrent abdominal pain. World J Gastroenterol. 2006; 12:3874-3877.
5. Buch NA, Ahmad SM, Ahmad SZ, Ali SW, Charoo BA, Hussan MU. Recurrent abdominal pain in children. Indian Pediatr. 2002; 39:830-834.
6. Graffeo Charles S, Counselman Francis L. Appendicitis. Emergency Medicine Clinics of North America. 1996; 14(4):653-71. doi: 10.1016/ s0733-8627 (05)70273 -x. PMID 8921763.
7. Hobler K. Acute and Suppurative Appendicitis: Disease Duration and its Implications for Quality Improvement (PDF). Permanente Medical Journal, 1998.
8. Schwartz's principles of surgery (9th ed.). New York: McGraw-Hill, Medical Pub. Division, 2010, Chapter 30. ISBN 978-0-07-1547703.
9. Paulson EK, Kalady MF, Pappas TN. Clinical practice. Suspected appendicitis (PDF). The New England Journal of Medicine. 2003; 348(3):236-42. doi: 10.1056/ nejmcp013351. PMID 12529465.
10. Leung AK, Sigalet DL. Acute abdominal pain in children. Am Fam Physician. 2003; 67:2321-6.
11. Lin CH, Chen JH, Li TC, Ho YJ, Lin WC. Children presenting at the emergency department with right lower quadrant pain. Kaohsiung J Med Sci. 2009; 25:1-9.
12. Caperell K, Pitetti R, Cross KP. Race and acute abdominal pain in a pediatric emergency department. Pediatrics. 2013; 131:1098-1106.
13. Erkan T, Cam H, Ozkan HC, Kiray E, Erginoz E, Kutlu T, *et al*. Clinical spectrum of acute abdominal pain in

Turkish pediatric patients: A prospective study. PediatrInt. 2004; 46:325-9.
14. Reynolds SL, Jaffe DM. Diagnosing abdominal pain in a pediatric emergency department. Pediatr Emerg Care. 1992; 8:126-8.
15. Williams NM, Johnstone JM, Everson NW. The diagnostic value of symptoms and signs in childhood abdominal pain. J R Coll Surg Edinb. 1998; 43:390-2.
16. Nance ML, Adamson WT, Hedrick HL. Appendicitis in the young child: a continuing diagnostic challenge, Pediatric Emergency Care. 2000; 16(3):160-162.
17. Alloo J, Gerstle T, Shilyansky J, Ein SH. Appendicitis in children less than 3 years of age: a 28-year review, Pediatric Surgery International. 2004; 19(12):777-779.
18. Reck T, Rupprecht H, Klein, Hummer HP. Appendicitis in early childhood, Fortschritte der Medizin. 1991; 109(36):733-736.