

Etiological Spectrum and Base-Line Investigations in Recurrent Pain Abdomen among Children

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Abstract:

Background: Recurrent abdominal pain is defined as episodes of pain occurring at least monthly for three consecutive months with a severity that interrupts routine functioning. Pain is classified as either organic or non-organic, depending on whether a specific cause of the pain is identified.

Aims and Objectives: To determine the etiological spectrum of recurrent abdominal pain in 5-12 years old children coming to the paediatric outpatient on the basis of first line investigations i.e. urine analysis, stool analysis and ultrasound abdomen and to study the incidence of irritable bowel syndrome according to ROME IV Diagnostic criteria.

Design: Prospective observational study. **Setting:** Tertiary level teaching hospital.

Methods: A total of 100 children with recurrent abdominal pain were enrolled, detailed history, general and systemic examination was done. Urine and stool routine microscopy and ultrasound abdomen was performed. Patients were differentiated into organic, functional and irritable bowel syndrome.

Results: Out of 100 children with RAP 84 were in 5-8 years age group and 16 where in 9-12 years, with slight male preponderance (53%). The site of pain showed that 43 had epigastric pain, 28 had in lumbar region, 20 in umbilical region and 4 in iliac fossa. In associated symptoms fever was present in 32 children, vomiting in 43, loose motions in 27 and abdominal distension in 15. Pain in relation to food intake is found in 32 children, 14 had aggravation and 18 children had relief. UTI was found in 11 cases and worm infestation in 10 children, 8 had Ascaris infestation, 1 each had hook worm and giardia infestation. USG abdomen showed renal calculi in 10 children and free fluid in the pelvis in 3 children. Thirty four children revealed an organic cause from the basic investigations, 12 could be classified as IBS.

Conclusion: First line investigation can lead to a diagnosis in one third cases of abdominal pain in children and in the remaining as of non-organic causes. 12% were diagnosed as IBS as per Rome IV criteria in the present study.

Keywords: Recurrent abdominal Pain, Rome-IV Criteria, IBS.

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Introduction

Abdominal pain is perhaps the most common painful health problem in school aged children. Most of the time causes for the pain are unknown and hence are considered as functional. J Apley[1], 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 "Episodes of pain occurring at-least monthly for three consecutive months with a severity that interrupts routine functioning". RAP is seen among 15% of middle

and high school students. Most common, yet one of most difficult symptoms to evaluate at times. Children have poor ability to express; differentiate emotional stress and somatic pain; may use abdomen pain even to indicate fear, anxiety, hunger, nausea or urge to defecate.

Pain is classified as either organic or non-organic, depending on whether a specific cause of the pain is identified. Approximately 10% of students who experience abdominal pain seek medical evaluation. Early investigation found an organic cause for RAP in 5-10% of children. Gastrointestinal tract symptoms are positively related to both anxiety and

depression, particularly in children with IBS-type symptoms. The present study was undertaken to study the causal factors related to RAP with intent to find out organic causes with help of routine investigations. An attempt was also made to categorize children as per Rome IV criteria for functional recurrent abdominal pain.

Aims and Objectives

1. To determine incidence of recurrent abdominal pain in children in the age group of 5-12 years coming to the pediatric OPD of DMCH, Laheriasarai.
2. To study the role of routine urine, stool analysis and ultrasonography of abdomen in children presenting with recurrent abdominal pain.
3. To study the incidence of IBS type symptoms according to ROME IV Diagnostic criteria in them.

Materials & Methods

This prospective observational study was conducted in a tertiary care referral unit of Paediatrics of Darbhanga Medical College Hospital, Laheriasarai from August 2017 to August 2018. All children presenting with recurrent abdominal pain in the age group of 5-12 years were included in the study. Children with acute abdomen, girls with menstruation problems and children with any known organic cause at the time of OPD registration were excluded from the study.

A total number of 100 children with recurrent abdominal pain were studied on out-patient basis. History of pain abdomen, associated symptoms, dietary history, past and family history was taken, followed by detailed general physical and systemic clinical examination. Urine and stool routine, microscopy and ultrasound examination of abdomen, pelvis was done. They were differentiated into organic and non-organic causes of RAP on the basis of first line investigations. Nonorganic cases were further reviewed for irritable bowel syndrome on the basis of ROME IV Criteria (Table 1)

Table 1: Rome IV Criteria for Diagnosing IBS:^c

Recurrent abdominal pain, on average, at least 1 day/week in the last 3 months, associated with two or more of the following criteria: Related to defecation. Associated with a change in frequency of stool. Associated with a change in form (appearance) of stool.
^c Criteria fulfilled for the last 3 months with symptom onset at least 6 months before diagnosis.
Source: Lacy B.E., Mearin F., Chang L., Chey W.D., Lembo A.J., Simren M., Spiller R. Bowel Disorders. <i>Gastroenterology</i> . 2016; 150:1393–1407. doi: 10.1053/j.gastro.2016.02.031.

Observation and Results

There were 84 children in 5-8 years age group and 16 where in 9-12 years. RAP was more common in male (53) than in females (47). Seventy four of them had complaints of RAP for 3-6 months duration and 26 had for more than 6 months duration. 43 had epigastric pain, 28 had in lumbar region, 20 in

umbilical region and 4 in iliac fossa. Associated symptoms such as fever was present in 32, vomiting in 43, loose motions in 27, abdominal distension in 15, constipation in 19 and burning micturition in 11. As regards to dietary history, 14 children had aggravation of pain on food intake, 18 reported relief from pain with food and 68 children had no relation of pain and food intake.

Table 2: Demographical and clinical features of patients

		Organic	Nonorganic	
			Functional	IBS
Age	5-8 years	28	46	10
	9-12 years	6	8	2
Sex	M:F	17:17	31:23	5:7
Duration	3-6 months	22	42	10
	>6 months	12	12	2
Site of Pain	Epigastric	11	25	7
	Lumbar	15	12	1
	Umbilical	5	13	2
	Iliac Fossa	3	1	0
	Hypochondriac	0	3	2
Frequency of Pain	Daily	8	12	3
	Weekly	17	29	6
	Monthly	9	13	3

Radiation	Radiating	14	10	2
	Non radiating	20	44	10
Character	Burning	5	11	2
	Non burning	29	43	10
Pain related to food	Increased	8	5	1
	Decreased	1	17	7
	Same	25	32	11
Pain related to defecation	Relief	2	4	12

On investigation (Table 3), UTI was found in 11 cases of RAP. Urine routine microscopy showed that 13 children had significant pus cells in urine, 9 had epithelial cells, 17 showed occult bloods in urine, and 8 had RBCs. Stool routine microscopy showed worm infestation in 10 children (8 had ascaris infestation, 1 each hook worm and giardia infestation). USG abdomen showed renal calculi in

10 children and free fluid in pelvis in 3 children. Thirty four children revealed an organic cause for RAP from the basic investigation. Based on the Rome IV criteria, of the total 66 children with non-organic causes of abdominal pain, 12 children could be classified as IBS. In the remaining 54 cases, no cause could be ascertained.

Table 3: Investigations

		5-8 years		9-12 years	
		Male	Female	Male	Female
Urine	Pus cells	5	7	1	0
	Epithelial cells	3	5	1	0
	Occult blood	7	5	2	3
	RBC	3	3	1	1
Stool	Ova & Cyst	3	5	2	0
	Pus cells	2	5	0	0
	Epithelial cells	0	2	0	0
	Occult blood	2	4	0	0
USG	Calculi	3	4	2	1
	Free fluid	2	1	1	0

Discussion

As the problem of pain in abdomen is distressing to the children as well as for the parents due to its diversity, such children need complete evaluation to ascertain the causes. In our study majority of the children were between the age group of 5-8 years whereas studies by Kuleshrestha et al [2] and Gupta et al³ reported around 50% of patients with pain in abdomen belongs to age group 9 to 14 years. Our study showed slight male preponderance of pain in abdomen whereas John Apley et al [1] have found girls were affected more common than boys i.e. 12.3% to 9.5%. It could be a cultural bias for care in favour of boys in the local community. Galler et al [4] reported 15.7% and 14% of prevalence of recurrent abdominal pain in girls and boys respectively. Kuleshrestha et al [2], Guta et al [3] and Gadiyar et al [5] found almost equal incidence of pain in abdomen in males and females. Kuleshrestha et al.[2] reported 42% of children had pain abdomen for less than 15 day and 45.5% for more than 1 year. Gupta et al [3] observed that 33% and 67% had pain in abdomen for 3 to 6 months and physical examination. Ultrasonography, pH probe studies and endoscopy have little additional diagnostic yield in absence of red-flag signals. H.

pylori infestation is as common in children with RAP as those without. In a study, out of 217 examinations in children with RAP, only 16 were abnormal, mostly unrelated to actual cause. [8] The present study showed worm infestation in 10% of children with RAP. Celia et al [9] reported Ascaris, trichuris trichura, hookworm and strongyloides stercoralis in 88.5%, 84.5%, 33.1% and 3% respectively in primary school children from Nigeria. Saxena et al [10] showed presence of helminths in 34% of patients with vague abdominal symptoms. Gupta et al [3] reported 76% patient with recurrent abdominal pain suffered from intestinal infestation. Gadiyar et al [5] found helminthic infestation in 24% of the children and protozoa, flagellate infestation in 35% of the children with RAP. Chawla et al [11] found only 5 cases of ascaris in a series of 202 children. The present study showed 34% children had an organic cause for RAP from the basic investigations and the remaining thought to be of non-organic causes. A study⁵ from New Delhi showed organic causes in 62%, psychogenic in 25% and 13% had no detectable cause. Reddy et al [12] from Hyderabad found 74% cases of organic origin, 13% of emotional nature and 13% cases were not diagnosed. Pushpa et al [13] studied 22 children of

RAP in which no physical cause could be detected and suggested pain was a suggestion of psychosomatic disorder. Manchanda et al [14] from Amritsar concluded that 45% cases were organic and 14% due to functional cause while no inference could be drawn from the remaining 31% cases. Gupta et al [3] showed organic causes were responsible for 85% cases while 15% were psychogenic. Rajiv et al [2] from New Delhi found organic cause in 86% cases and 14% remained undiagnosed. Mohandas et al [15] studied 200 children with pain in abdomen and concluded that only 6% of cases could be attributed to emotional disturbances. Mackeith and O'Neil [16] studied 25 cases of RAP in which 21 were found to have emotional disturbances and 12 of these 21 cases had a parent suffering from abdominal pain which might have influenced the child's psychogenic makeup. Wood J J et al [17] from Chicago found that 20% of cases were due to organic causes. However, it must be appreciated that diagnosis of functional pain abdomen is only by exclusion after adequate history, clinical examination and investigation. It is essentially an abnormality in 'Brain-gut' interaction and not merely as a manifestation of symptoms in some psychogenic illness. Such abnormality could be anywhere at levels of gut, spinal afferents, central autonomic relay system or brain [18].

Limitations

The current study had certain limitations. The sample size was small, with regard to otherwise high incidence of RAP among children. Secondly, only the first line basic investigations were done which lead to detection of far less number of organic causes. Lastly, the follow up of patient was not done for prolonged period to know the ultimate course of disease in non-organic cases.

Conclusion

The study concludes that commonest age of presentation of RAP is 5-8yrs, with slight male preponderance. Most patients presented with history of pain lasting from 3-6 month in epigastric region, may be due to gastritis. Other associated symptoms were fever, vomiting, burning micturition, constipation and abdominal distension. First line investigation can leads to a diagnosis in 34% of children with RAP. In the remaining, 66% were of non-organic cases. 12% were diagnosed as IBS as per Rome IV criteria.

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