

# Recurrent Pain Abdomen Among Children- An Emphasis on Base Line Investigations

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## ABSTRACT

**Introduction:** Recurrent abdominal pain (RAP), a frequent presenting complaint in general practice, first defined by Apley as “episodes of pain occurring at least monthly for three consecutive months with severity that interrupts routine functioning”. Pain is classified as either organic or non-organic, with a plenitude of factors being implicated in genesis. The symptoms tend to be vague and investigations seldom show organic disease. Study was done to determine the causes of RAP in 5-14 years old children visiting the Paediatric OPDs on the basis of baseline tests that includes urine routine examination, stool routine examination and sonography.

**Material and methods:** A total of 112 children with recurrent pain abdomen were enrolled in the prospective observational study. Detailed history was taken following which general and systemic examination was done. Complete blood count, urine and stool routine microscopy and ultrasound abdomen were done. Additional investigations like X-ray chest and abdomen, barium meal study, tuberculin and serological test for tuberculosis were carried out based on their necessity. Patients were categorised into organic and functional (non-organic) groups.

**Results:** Out of 112 children with RAP, 86 were in 5-10 years age group and 26 were in 11-14 years. The site of pain abdomen was categorised as 63 in epigastric region followed by umbilical region and other areas. Among associated symptoms fever and vomiting were present in most of the cases apart from loose stools, constipation, chest pain and burning micturition. Pain in relation to food was observed in 35 children. USG abdomen showed retro peritoneal lymphadenopathy in 4 children and 2 patients were suffering from abdominal tuberculosis. Fifty three children revealed an organic cause from the basic investigations.

**Conclusions:** Baseline investigations can lead to a diagnosis in 47% cases of recurrent abdominal pain in children.

**Keywords:** recurrent abdominal pain, organic or non-organic

## INTRODUCTION

Abdominal pain is one of the common health problems encountered in school aged children. Most parents are ignorant about the complaints presuming the self-limiting and transient nature of such episodes. Very often the etiology is undetectable and are considered as functional.

The term Recurrent Abdominal Pain came into existence as early as 1958. J Apley evaluated abdominal pain among children extensively and concluded nearly 10% of his subjects perceiving recurrent pain abdomen, with a slight female preponderance 12.3% as compared to 9.5% in males.<sup>1</sup> He coined 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 severity that interrupts routine functioning”. RAP is seen among 10-12% of school aged children with female preponderance.<sup>2-5</sup>

In spite of being one of the most common complaints, this is one

of most difficult symptoms to evaluate at bedside owing to its varying magnitude of etiology. Eliciting a proper localisation from the child and the pretension of abdominal pain when the child is in an uncomfortable or stressful situation or as a result of nausea, or urge to defecate; hinder the pediatrician in reaching a specific diagnosis.

Pain is categorised as either organic or non-organic, depending on whether a specific etiology of the pain is detected. In studies using Apley’s definition of RAP the prevalence ranged from 11% to 45%.<sup>6-9</sup> The present study was under taken to study the etiological factors related to RAP with an objective to find out organic causes with help of routine investigations.

Study aimed to determine incidence of recurrent abdominal pain in children in the age group of 5-14 years coming to the pediatric OPD of Hi Tech Medical College and Hospital, Bhubaneswar and to study the role of routine urinalysis, stool analysis and ultrasonography of abdomen and pelvis in children presenting with recurrent pain abdomen.

## MATERIAL AND METHODS

This study was conducted in Hi- Tech Medical College And Hospital, Bhubaneswar. This prospective study was done from February 2015 to September 2015 of HMCH after ethical approval from the institutional ethical board and the informed consent from the school authorities/ parents/ children. All children presenting with recurrent pain abdomen in the age group of 5-14 years were included in the study. Subjects with acute pain abdomen, with any previously diagnosed organic cause and girls with any menstrual problems or any suspicion of pregnancy formed the exclusion criteria of the study.

A total of 112 children were evaluated having complaints of recurrent pain abdomen. History of pain abdomen with features like localisation, relieving and aggravating factors, correlation with symptoms, dietary history, family history was taken, followed by thorough general physical examination and systemic clinical examination. Laboratory investigations like complete blood count, urine and stool routine examination and ultrasonography of abdomen and pelvis was done. Special investigations like X-ray chest, tuberculin and serological test for tuberculosis were carried out as and when necessary. Upper gastrointestinal endoscopy and serum amylase were performed,

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whenever indicated.

Based on the baseline investigations, the subjects were categorised into organic and non-organic causes of RAP. Children, who were considered to have an organic cause were treated as per the cause and followed for at least 3 months. Organic RAP was labelled when: (a) an organic cause was demonstrated, (b) there was clinical and laboratory response to treatment, and (c) there was sustained remission from abdominal pain for at least three months after treatment. Rest of the patients, labelled as non-organic RAP (NORAP), were assessed by a psychiatrist and accordingly managed for 4-6 months. 32 patients of NORAP who were unable to get relief of pain even after 6 months follow up, were subjected to upper GI endoscopy, EEG and serum amylase estimation.

## STATISTICAL ANALYSIS

Statistical analysis and tables were made with the help of Microsoft office 2007. Descriptive statistics like mean and percentages were used to infer the results.

## RESULTS

A total of 112 subjects were recruited in the study. Out of this 86 were in 5-10 years age group and 26 were in 11-14 years. Male-female ratio was 1.12:1, with slight male preponderance of about 52% than in females. Eighty eight of them had complaints of RAP for 3-6 months and rest 24 children had for more than 6 months duration. 63 children had pain in epigastric region, 32 had around umbilical region, 13 had in lumbar region, and 4 children in iliac region. Associated symptoms such as fever was present in 51 children out of 112, vomiting was present in 32 children, 4 children complained pain abdomen associated with loose motion, constipation in 10, chest pain or heart burn was present in 9 patients and 6 children with burning micturition. As regards to dietary history 77 children had no relation of pain with food intake. The clinico- demographic characters have been summarised in Table-1.

On investigation, UTI was ascertained in 26 cases, urine routine microscopy showed that 15 children had significant pus cells in urine, 6 had epithelial cells, 10 had occult blood and 5 had RBCs in urine examination.

Stool routine microscopy showed worm infestation in 15 children ( 7 had ascaris, 4 had giardia, 2 had hook worm, and 1 each roundworm and strongyloids ). USG abdomen and pelvis showed renal calculi in 1 patient and non -specific retro peritoneal lymphadenitis in 4 children. Upper gastrointestinal endoscopy in 8 patients above the age of seven years revealed esophagitis in 2 and gastritis in 3 with one patient harbouring *H. pylori* infection. Two patients had abdominal tuberculosis confirmed on ultrasonography, tuberculin and ELISA tests and examination of ascitic fluid.

Fifty three children revealed an organic cause for RAP on basis of first line investigation. Remaining were 59 children, in which 18 children were suffering from psychogenic problems related

to family, friend, studies and school. Other 41 children had no obvious cause could be evaluated. psycho-therapy was given in patients with NORAP. Of patients with NORAP, 77% were pain-free within 4-6 months except a few who persisted with pain and in whom endoscopy, EEG and serum amylase levels were normal.

## DISCUSSION

Tackling the problem of pain abdomen is nagging to the children experiencing it as well as for the family and medical professionals owing to its complex origin. A series of investigations may be needed to thoroughly evaluate and establish the diagnosis. In our study most of the children (77%) were between the age group of 5-10 years. In our study majority of patients subjected to RAP were boys in contrast to Apley et al<sup>1</sup> and Galler et al<sup>10</sup> where girls were affected more common than boys. Our findings may have been due to the extra cautiousness with which the male gender is taken care of in comparison to female children. In a society where girl children are still considered as a liability, few parents prefer not to spend much on their daughters. Gadiyar et al<sup>11</sup> found almost equal incidence of pain in abdomen in males and females.

The present study showed worm infestation in 13.3% of children with RAP. Celia et al<sup>12</sup> reported parasitic infections among school children in an African country as follows: *Ascaris trichurus trichura*, hookworm and *strongyloides stercoralis* in 88.5%, 84.5%, 33.1% and 3% respectively. Saxena et al<sup>13</sup> showed oxyuriasis in 34% of patients with vague abdominal pain whereas Gadiyar et al<sup>11</sup> reported 24% of the children were having helminthic infections. Most studies in India have recognized giardiasis, as the leading cause for intestinal parasitic infections causing RAP<sup>14,15</sup>

About 47% revealed an organic cause for RAP from basis first line investigation. Eighteen (16%) children were suffering from psychogenic problems related to family, friend, studies and school. Rest 37% no cause could be ascertained. Table-2 gives a comparative etiological analysis for RAP done in various parts of the world.<sup>11,17-19</sup>

Gadiyar et al reported organic causes in 62%, psychogenic in 25% and rest 13% were considered idiopathic. Relationship of stress with RAP have been well established.<sup>1,4,5</sup> Very often there is a family history of similar problems, which may include first-degree relatives too. Campo et al.<sup>16</sup> found that anxiety and depressive disorders were more prevalent in pediatric patients with recurrent abdominal pain.

Psychogenic illness manifests as functional pain abdomen but it is not the only entity that signifies functional abdominal pain. It must be bore in mind that diagnosis of functional pain abdomen is a diagnosis of exclusion. The site of abnormality could be the gut, spinal afferents, central autonomic relay system or brain.

In our study most of the patients perceived pain in the epigastric region followed by the umbilical region. This is contrary to various literatures where the commonest presentation is

	Present study	Reddy et al <sup>17</sup>	Manchanda et al <sup>18</sup>	Gupta et al <sup>19</sup>	Gadiyar et al <sup>11</sup>
Organic	47%	74%	45%	85%	62%
Functional	16%	13%	-	15%	25%
Inconclusive	37%	13%	-	-	13%

Table-2: Comparison with Previous studies

		n=112	Percentage
Age	5-10 years	86	77%
	11-14years	26	23%
Gender	Male	58	52%
	Female	54	48%
Duration	3-6 months	88	79%
	>6 months	24	21%
Site	Epigastric	63	56%
	Umbilical	32	28%
	Lumbar	13	12%
	Iliac	4	4%
Associated symptoms	Fever	51	46%
	Vomiting	32	28%
	Loose motion	4	4%
	Constipation	10	9%
	Chest pain	9	8%
	Burning micturition	6	5%
Effect of food intake	Aggravates	16	14%
	Relieves	19	17%
	No impact	77	69%

**Table-1:** Demography and Clinical Profile of Subjects

periumbilical pain, which may be associated with nausea and vomiting.<sup>1,4</sup> The growing preference for junk food and the craving for street food leading to gastritis may have been responsible for us getting a high incidence of epigastric localization. Very often when the child reaches the OPD, the pain has already subsided and it is not possible for the child to give the site accurately.

In our study 1 patient showed H.pylori infection. Donohue et al.<sup>20</sup> reported no relation between positive serology and a history of recurrent abdominal pain in a large sample of urban school children. It might have been an incidental finding in our case, as there is no strong evidence that H pylori infection perse causes pain.

Several studies point towards a contributory role of lactose malabsorption in the symptoms of RAP<sup>21</sup>, but none of our cases had supportive evidence for such a condition.

Several large-scale studies have been carried out to ascertain the benefit of fiber supplements and lactose restricting diets in relieving episodes of RAP, but they have been inconclusive.<sup>22</sup> Though a few studies like the one done by Feldman, et al.<sup>23</sup> reported a significant benefit of fiber supplementation. Short durations of cognitive- behavioral family treatment (CBT) have resulted in significant improvement of symptoms and fewer school absenteeism in children with RAP.<sup>24,25</sup> However there are a few studies, which question the benefit of CBT.<sup>26</sup>

### Limitations

The present study had limitations like small sample size. Follow up of patients was not done for prolonged period into adulthood, which would help us to know the end result of non-organic subjects. Certain studies show a higher existence of RAP in lower stratas of the society but socioeconomic stratification could not be done in our study.

### CONCLUSION

The importance of baseline investigations must be stressed as they can help in making the diagnosis of 47% of children with RAP having an organic cause. Most cases of RAP localise to epigastric region and periumbilical region, with the commonest

age group of presentation being 5-10 years with male preponderance. In the remaining 53% were non-organic cases. 16% were diagnosed as psychogenic cause for pain abdomen. The rest of the cases may require additional investigations.

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