

## RECURRENT ABDOMINAL PAIN IN CHILDREN

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### ABSTRACT

**Objective:** To determine the causes of recurrent abdominal pain (RAP) in children and suggest general management guidelines.

**Methodology:** It is a descriptive observational study conducted from August 2000 to July 2003. One hundred fifty two children of 2- 15-Years age with recurrent abdominal pain were enrolled in this study. A pre-designed proforma was filled and investigations like Complete Blood Count (CBC), urine and fresh stool analysis was performed in all cases. Patients presenting with upper abdominal pain with or without dyspeptic symptoms were evaluated for H. Pylori by serology. Helicobacter pylori antibody serology (value >50 i.u Elisa method) positive patients were offered endoscopy examination and endoscopic antral biopsies were done. Other tests like x-ray chest and or abdomen, barium meal study, ultrasonography of abdomen, EEG examination and tuberculin test were done as indicated. Patients were followed at 2-week interval for three months and specific treatment prescribed as per etiology identified.

**Results:** Out of 152 children, a female to male ratio was 2:1, age range was 2-15 years and mean age was 8.9 years. Mean duration of symptoms was 16 months. Patients presented with epigastric localization of pain 65%, 25% presented with 'whole' abdominal pain while 5% patients presented with pain in loins and 5% had pain in lower abdomen. Protozoal infections which included giardiasis and amoebiasis (33%) were the commonest association followed by Helicobacter pylori (31%). Endoscopy was performed in 15 cases; biopsy was positive for H.Pylori in all (100%) cases. Thirteen percent had worms in addition to giardia and entamoeba histolytica and 10% had gastro-esophageal reflux. Among other causes urinary tract infection was 5%, constipation was 3% & peptic ulcer diseases was 02%. Abdominal epilepsy, abdominal migraine, cholelithiasis, ovarian cyst, ulcerative colitis and gastric-trichobiozoar all were less than 1%.

**Conclusions:** Recurrent abdominal pain is frequent and challenging pediatric problem. High index of suspicion and careful thorough clinical evaluation supported by stepwise laboratory work-up according to its clinical presentation and consideration of common treatable causes will be a cost effective approach. Balanced diet with higher fiber content, environmental cleanliness, better quality of water and good personal hygiene practices can reduce common infections with causative factors.

**KEY WORDS:** Recurrent Abdominal Pain Children, H.Pylori, Protozoal infection, Worms, gastro-esophageal reflux.

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### INTRODUCTION

Recurrent Abdominal Pain (RAP) in children is defined as at least three episodes of abdominal pain during three month period and severe enough to affect their activities.<sup>1,2</sup> RAP affects 34% of world's population and prevalence of RAP in school going children ranges

between 10-20%.<sup>3</sup> It is frequent diagnostic problem faced by general Physicians and Pediatricians. RAP has diverse etiology according to place and local conditions. The etiology and pathogenesis of recurrent abdominal pain in Pakistani scenario are not well known and seem to be labeled as functional abdominal Pain. However with availability of new diagnostic modalities including application of endoscopic examination various infectious and non-infectious causes and anatomical abnormality detection has become possible.<sup>1</sup> In the wake of these observations now it is recognized that treatable pathological causes may be more common than previously thought in children.<sup>3,4</sup> It has also been reported that incidence and etiology of RAP varies between geographical areas; hence locally tailored recommendation or guidelines could be derived.

Awareness among the physicians about new diagnostic modalities and prevalence of different causes of RAP in children in their area is helpful for appropriate management of children. This study was conducted so that local reasons /causes of RAP be ascertained and suggestions made about causative factors which can be looked into on priority basis. Another objective was to formulate general management guidelines including easily treatable causes of RAP in children.

## METHODOLOGY

All children of 2-15 years age attending the out patient department for recurrent abdominal pain from 4th August 2000 to 3<sup>rd</sup> July 2003 were enrolled in this study. A pre-designed proforma was completed including history and complete examination, which also included developmental and psycho developmental evaluation. Investigations like Complete Blood Count (CBC), Urine and fresh stool analysis was performed in all cases. Patients presenting with upper abdominal pain and or dyspeptic symptoms were evaluated for H. Pylori by serology. Helicobacter pylori antibody serology (value >50 i.u Elisa method) positive patients were offered endoscopic examination and endoscopic antral biopsies were

performed. Other special tests like X-ray chest & abdomen, barium meal study, ultrasonography of abdomen, EEG examination and tuberculin test were done as indicated by clinical examination. Patients were followed at two week interval for three months and specific treatment prescribed as per etiology identified.

Patients presenting with acute abdominal pain or concomitant severe infection and patients who failed to complete initial follow up visit at two weeks were excluded.

## RESULTS

One hundred fifty two children met criteria of RAP and completed follow-up as per study protocol. Females (101) outnumbered males (51) the ratio being 2:1. Age range was 2-15 years and mean age was 8.9 years. Mean duration of symptoms was 16 months and range was three months to seven years.

Sixty five percent of Patients presented with epigastric localization of pain, twenty five percent with 'whole' abdominal pain while 5% patients presented with pain in loins and rest 5% had pain in lower abdomen. Protozoal infections (33%) were the commonest association followed by Helicobacter pylori (31%). After having consent for endoscopy, biopsy was done in 15 cases. Biopsy from antral part was positive for H.Pylori in all cases. Thirteen percent had worms in addition to giardia or amoeba and 10% had gastro-esophageal reflux diagnosed by endoscopy. Among other causes urinary tract infection was 5% which were diagnosed by routine urinalysis culture and ultra sound examination. Constipation was 3% & peptic ulcer disease were 02%. Abdominal epilepsy, abdominal migraine, cholelithiasis, ovarian cyst, ulcerative colitis and gastric-trichobiozoar all were less than 1%. (Table-I)

No non-organic cause was identified in this study (Table-II). All patients were managed specifically according to cause. Patients with Giardiasis were managed with metronidazole for seven days and those with H.pylori treated with Triple therapy (Clarithromycine+metronidazole +omeprazole). All patients were given instructions about food, water, hygiene

Table-I: Causes of recurrent abdominal pain in children (n=152)

Causes	No (%)
Protozoal infections	49(33)
Giardiasis/ Amebiasis	
H. Pylori	47(31)
Worms (Asc. Lumb: E.V)	19(13)
Mixed with Giarda /E. histolytica	
Reflux Esophagitis	15(15)
UTI	8(5)
Chronic Constipation	5(3)
Peptic Ulcer disease	3(2)
Abdominal Epilepsy	01(0.6)
Cholilithiasis	01(0.6)
Ovarian Cyst	01(0.6)
Ulcerative Colitis	01(0.6)
Gastric Trichobezoar	01(0.6)
Abdominal Migraine	01(0.6)

and high roughage diet and specific treatment was given according to the cause. Surgery was done for cholilithiasis. Follow-up was done for three months while patients remained asymptomatic.

## DISCUSSION

Recurrent abdominal pain in children is a common problem and a difficult clinical diagnostic concern.<sup>1,2</sup> About 10-20% of schools going children suffer from RAP and it is estimated that up to 34% of world's population of children is afflicted with this disorder at some time.<sup>3</sup> It has remained a controversial pediatric problem and proportion of category labeled, as "functional Abdominal Pain" seems to increase in older age group with proportionate reduction of infectious etiology.<sup>4</sup> RAP is the common "Pain syndrome" with diverse etiology, frequency and causes varying in different age groups and different geographical areas. This depend on their dietary habits, water quality, personal hygiene, socioeconomic status and ethnic background.<sup>5</sup> Prevalence of RAP is more in females as seen in this study, which is also reported in other studies in same age group.<sup>6,7</sup> The mean duration of symptoms was 3-months to 7-years, reflecting that patient remained undiagnosed for quite a long period. A wide list of possible causes must be considered before labeling functional abdominal pain and new diagnostic modalities can be applied to exclude treatable causes of RAP.

Table-II: Causes of Recurrent Abdominal Pain in Children according to age

	2- 5 yr (n = 36)	5-10-yr (n =53)	>10 yr (n =63)	Total (n = 152)
Non-Organic	–	–	–	–
Organic	36	21	29	152
Giardia	17	13	19	49(33%)
H.Pylori	08	17	22	47(31%)
Giardia and other parasites	04	08	07	19 (13%)
Reflux Esophagitis	02	08	05	15(10%)
Urinary tract infection	03	02	03	08 (5%)
Constipation	02	02	01	05(3%)
Ulcer peptic disease	–	01	02	03 (2%)
Abdominal Epilepsy	–	–	01	01
Gall stones	–	01	–	01
Ovarian cyst	–	–	01	01
Ulcerative Colitis	–	–	01	01
Gastric Trichobizoar	–	–	01	–
Abdominal Migraine	–	01	01	01

Protozoal infections (Giardiasis and amoebiasis) accounted for 33%; the most important treatable and preventable cause found in this study as also reported from other studies from the subcontinent.<sup>7</sup> Protozoal infections can present with failure to thrive and diarrhea in addition to recurrent abdominal pain.<sup>7</sup> Identification of Protozoal infection requires fresh stool sample examination. *Helicobacter pylori* (31%) were another treatable etiology found in this study. Epigastric localization of pain is an important symptom, a strong correlation with *H. Pylori* association is to be considered and suggestion for screening of *H. Pylori* is recommended as reported in other studies.<sup>8,9</sup> In this study out of 152, Ninety-eight patients had positive serology, screening having been based on pain localization (epigastric).

The *H. Pylori* associated RAP is reported with varying frequencies in different studies in developed and developing world.<sup>8-13</sup> In our study, 31% were serologically positive; the higher prevalence rate in our children may have been because of majority of children from lower and lower middle socio economic status. Probable source of this infection could be lack of safe water, poor hygiene and poor dietary habits. In our study, more than 90% families were consuming un-boiled water.

Among other causes of RAP 13% had intestinal worms (*Ascaris Lumbricoides* and *enterobius vermicularis*); potentially treatable causes.<sup>7</sup> The reflux esophagitis (10%) is another important cause in this study, which require high index of suspicion for upper GI symptoms; endoscopy is the useful test to document this important manageable cause.<sup>14</sup> Similar studies from Italy have reported this cause as frequent as to 21%.<sup>15</sup> Constipation is also reported as a cause of recurrent abdominal pain as evident from other studies.<sup>5,16</sup> In our study constipation was responsible for abdominal Pain in 3% of the patients. Almost 90% patients in our study had a history of using junk food (tea, betel nuts, rusk, candies, chewing gums) thus lack of fiber in the nutrition could be a contributing cause of constipation leading to recurrent abdominal pain. The nutrition status of

these children was grade- II malnutrition (according to modified Gomez classification) in 51% patients, which is higher than reported by WHO in developing world.<sup>17</sup> Ninety percent patients were suffering from iron deficiency anemia; mean hemoglobin was 9 gm%, peripheral picture was microcytic hypochromic and absolute values like MCV, MCH, MCHC were lower than normal. In non-gastro-intestinal causes of RAP, urinary tract infection (UTI) was found in 5% of cases. Pain in loins or in lower abdominal region with other urinary symptoms of increased frequency and or burning micturation was present; these urinary symptoms give strong probability of UTI. All these patients with probability of UTI were advised ultra sound examination which revealed grade-I parenchymal changes, thus ultrasound examination of kidney ureter and bladder (KUB) along with urine detail report and culture sensitivity was recommended for evaluation of RAP with probable UTI as reported in other studies.<sup>5</sup> Peptic Ulcer disease in children is infrequent cause of recurrent abdominal pain and most of the time it is related with *helicobacter-pylori* infection ranging from 33-100%.<sup>13</sup> In this study, peptic ulcer was found in 3% of cases with classical symptoms i.e pain related with meals associated with nausea, vomiting and diagnosis was established by Endoscopy.<sup>18</sup> Abdominal epilepsy, Abdominal Migraine, Cholelithiasis, Ovarian Cyst, Ulcerative colitis and gastric-trichobiozoar were less than 1%.<sup>19</sup> Other organic causes of RAP reported by different workers include food allergy and lactose intolerance. Celiac diseases, RAP with sickle cell Anemia, RAP associated with Lead poisoning, Hereditary Angioedema, Slipping rib syndrome were not found in this study.<sup>20</sup>

## CONCLUSIONS

Recurrent abdominal pain is frequent and challenging pediatric problem. High index of suspicion and careful thorough clinical evaluation supported by stepwise laboratory work-up according to its clinical presentation and consideration of common treatable causes will

be cost effective approach. Evaluation for common infections including H.Pylori with epigastric localization of pain is also recommended. Balanced diet with higher fiber content, environmental cleanliness, better quality of water and good personal hygiene practices can reduce common infectious causative factors.

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