

Recurrent abdominal Pain in Children – An analysis of the aetiological factors**Santosh Kumar¹, Bir Prakash Jaiswal²**¹ Senior Resident, Department of Pediatrics, AIIMS, Patna, Bihar, India² Associate Professor, Department of Pediatrics, NMCH, Patna, Bihar, India

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Abstract

Background: Recurrent abdominal pain (RAP) is common in children. One to two of every 10 children will experience it at some time. Children with recurrent abdominal pain are often anxious or depressed. **Aim:** To study the etiological factors related to RAP. **Methods:** Patients of age group of 4 to 14 years attending the paediatric OPD was included in the study. Children with age less than 4 years and more than 14 years not meeting the criteria of RAP were excluded from the study. Children with organic causes of RAP have been treated according to corresponding reason. **Results:** Occurrence of abdominal pain every day in ORAP was 10 and 32 NORAP children, and once per week in organic ORAP was 3 and 14 NORAP children. Duration of a pain episodes most of the day in ORAP was 11 and 21 NORAP children. Severe pain can see in 9 ORAP and 24 NORAP, and mild pain in 2 ORAP and 19 NORAP. Whereas, site of pain especially in periumbilical region in ORAP was 5 and 28 NORAP children, and lower abdomen pain in organic ORAP was 4 and 23 NORAP children. Moreover, 2 months duration of disease in ORAP was 17 and 3 NORAP children. In addition, presence of bloating in ORAP was 6 and 22 NORAP children, and absence of bloating in ORAP was 11 and 51 NORAP children. Presence of early satiety in in ORAP was 8 and 19 NORAP children, and absence of satiety in ORAP was 9 and 54 NORAP children. **Conclusion:** Recurrent abdominal pain (RAP) in children with careful history and examination, clear explanation and follow-up and a commitment from parent and child to stop the condition limiting normal activities, good results are obtained for children without referral, drugs or extensive testing.

Keywords: Recurrent abdominal pain, Organic pain, Functional pain.

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Introduction

Abdominal pain is one of the common health problems encountered in 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. 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. 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%. 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.

Materials and Methods

This prospective, descriptive and observational study was conducted at Department of Pediatrics and neonatology, at Nalanda Medical College and Hospital, Patna. The study was conducted over a period of 2 year from June 2015 to May 2017. The study was approved by institutional research and ethical research committee. Informed consent was taken from all the participants after explaining the study protocol.

Inclusion criteria

Patients of age group of 4 to 14 years of either gender study with RAP.

Exclusion criteria

Children with age less than 4 years and more than 14 years not meeting the criteria of RAP were excluded from the study. Children with organic causes of RAP have been treated according to corresponding reason. Organic RAP was said to be present when;

There was an organic cause documented

There was both clinical and laboratory improvement with treatment and

There was sustained clinical remission for at least three months after therapy.

The patients who did not satisfy the above criteria were considered to have Non-organic RAP and were compared with an equal number of age and sex-matched controls, that comprised of children attending the Paediatric Outpatient Department

A detailed history and clinical examinations, complete haemogram, urine for routine analysis as well as culture and stool examination were done in all cases. Other investigations like chest X-ray, ultrasonography performed where ever necessary.

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Statistical Analysis

All the data obtained were presented in percentages using Microsoft excel.

Results

Out of 90 patients of RAP, sex distribution is unequal with male predominance (67.7%) and less female (32.3%). Although in this study, age group was in the following order by decreasing 4-6 years old (47.7%), followed by 7-10 years old (31.1%) and 11-14 years old (21.1%).

Table 1: Distribution of the Gender

Gender	N=90 (Percentage of cases)
Male	61 (67.7%)
Female	29 (32.3%)

Table 2: Distribution of Age group

Age group (in years)	N=90 (Percentage of cases)
4-6	43 (47.7%)
7-10	28 (31.1%)
11-14	19 (21.1%)

Table 3: Characteristics: Organic RAP Versus Non-organic RAP

Parameters	Organic RAP n=17 (%)	Non-organic RAP n=73 (%)
Occurrence abdominal pain		
Once per week	3 (17.6%)	14 (19.1%)
Several times per week	4 (23.5%)	27 (36.9%)
Everyday	10 (58.8%)	32 (44.3%)
Duration of a pain episodes		
Less than 1 hour	1 (5.8%)	24 (32.8%)
1-2 hours	2 (11.7%)	21 (28.7%)
3- 4 hours	3 (17.6%)	7 (9.5%)
Most of the day	11 (64.7%)	21 (28.7%)
Severity of pain		
Mild	2 (11.7%)	19 (26.0%)
Moderate	6 (35.2%)	30 (41.0%)
Severe	9 (52.9%)	24 (32.8%)
Site of pain		
Upper abdomen	2 (11.7%)	5 (6.8%)
Periumbilical	5 (29.4%)	28 (38.3%)
Lower abdomen	4 (23.5%)	23 (31.5%)
Other	6 (35.2%)	17 (21.9%)
Duration of the disease		
2 months	17 (100%)	3 (4.1%)
3 months	0	5 (6.8%)
4-11 months	0	3 (4.1%)
More than 12 months	0	62 (84.9%)
Bloating		
Yes	6 (35.7%)	22 (32.0%)
No	11 (64.2%)	51 (69.8%)
Early satiety		
Yes	8 (47.0%)	19 (26.0%)
No	9 (52.9%)	54 (73.9%)
Anorexia		
Yes	11 (64.2%)	52 (71.2%)
No	6 (35.7%)	21 (28.7%)
Nausea		
Yes	6 (35.7%)	14 (19.1%)
No	11 (64.2%)	59 (80.8%)
Vomiting		
Yes	6 (35.7%)	16 (21.9%)
No	11 (64.2%)	57 (78.0%)
Constipation		
Yes	5 (29.4%)	52 (71.2%)
No	12 (70.5%)	21 (28.7%)
Loose stools		
Yes	9 (52.9%)	14 (19.1%)
No	8 (47.0%)	59 (80.8%)
Interference with sleep		

Yes	12 (71.4%)	29 (39.7%)
No	5 (28.5%)	44 (60.2%)
Disturbance in daily activities		
Yes	13 (76.4%)	33 (45.2%)
No	4 (23.5%)	40 (54.7%)
Headache		
Yes	6 (35.2%)	16 (21.9%)
No	11 (64.7%)	57 (78.0%)
School absenteeism		
Yes	12 (71.4%)	29 (39.7%)
No	5 (28.5%)	44 (60.2%)
Photophobia		
Yes	13 (76.4%)	59 (80.8%)
No	4 (23.5%)	14 (19.1%)
Pallor		
Yes	4 (23.5%)	14 (19.1%)
No	13 (76.4%)	59 (80.8%)

[Table 3] In our study, Occurrence of abdominal pain every day in ORAP was 10 and 32 NORAP children, and once per week in organic ORAP was 3 and 14 NORAP children. Duration of a pain episodes most of the day in ORAP was 11 and 21 NORAP children. Severe pain can see in 9 ORAP and 24 NORAP, and mild pain in 2 ORAP and 19 NORAP. Whereas, site of pain especially in periumbilical region in ORAP was 5 and 28 NORAP children, and lower abdomen pain in organic ORAP was 4 and 23 NORAP children. Moreover, 2 months duration of disease in ORAP was 17 and 3 NORAP children. In addition, presence of bloating in ORAP was 6 and 22 NORAP children, and absence of bloating in ORAP was 11 and 51 NORAP children. Presence of early satiety in in ORAP was 8 and 19 NORAP children, and absence of satiety in ORAP was 9 and 54 NORAP children.

Furthermore, in our results loss of appetite in ORAP was 11 and 52 NORAP children. Presence of nausea in ORAP was 6 and 14 NORAP children. Presence of vomiting in ORAP was 6 and 16 NORAP children. Defecation of loose stools in ORAP was 9 and 14 NORAP children. Interference with sleep in ORAP was 12 and 29 NORAP children, and non- interference with sleep in ORAP was 5 and 44 NORAP children. Headache in ORAP was 6 and 16 NORAP children. School absenteeism in ORAP was 12 and 29 NORAP children. Photophobia was seen in ORAP was 13 and 59 NORAP children. Finally, pallor was seen in ORAP was 4 and 14 NORAP children.

Discussion

Recurrent abdominal pain (RAP) in children is defined as at least three episodes of pain that occur over at least three months and affect the child's ability to perform normal activities. However, with careful history and examination, clear explanation and follow-up and a commitment from parent and child to stop the condition limiting normal activities, good results are obtained for children without referral, drugs or extensive testing.[6]

The pathophysiology involves a dysregulation of visceral nerve pathways, leading to visceral hyperalgesia. Infective, inflammatory or psychological triggers may initiate this sensitisation.[7,8] The onset of paediatric IBS frequently follows an episode of acute gastrointestinal inflammation (infectious or non-infectious).[9] RAP is additionally affected by temperament and by family and school environments (the bio-psychosocial model). Less effective mechanisms of coping with stress may contribute to pain and to associated anxiety and depression Poor diet, poor fluid intake and lack of exercise can contribute to RAP.[10]

For all types of RAP in children, the primary goals of management are improving quality of life, reducing parent and child concern about the seriousness of the condition, and reducing disability associated with pain rather than complete resolution of pain.[11] It is

important to validate the child's pain but reassure the family when there is no evidence of serious underlying pathology. Support and reassessment should be offered if alarm symptoms arise. Parents should be encouraged to avoid reinforcing RAP symptoms with secondary gain, such as missing school or removal from routine activities because of pain, and to return to a normal routine when possible.[12] If appropriate, the child should be included in identifying psychological factors that might worsen the symptoms, such as bullying; peer coercion; stress or anxiety; sexual, emotional, or physical abuse; or domestic violence.[13]

In children with functional abdominal pain, the use of probiotics, such as *Lactobacillus*, reduces the intensity and frequency of abdominal pain and is safe in children.[14] There is a lack of evidence for the relative biologic activity and effectiveness of different commercial preparations.[15] Synbiotics are dietary supplements that combine probiotics and prebiotics (a supplement that alters resident bacteria).

Lactol, a synbiotic that includes *Bacillus coagulans* (probiotic) and fructooligosaccharides (prebiotic), shows mixed results for functional abdominal pain, with initial improvement but no difference after 12 weeks.[16] Lactol with pH-dependent peppermint oil (187 mg three times per day) may have benefit.[17]

Although treatment focused on a diagnosis does not reliably improve RAP, the following interventions may be beneficial in conjunction with supportive management.[18]

Acid Reflux: Antacids and histamine H2 antagonists are used in children, although their benefit has not been well studied.

Dyspepsia: Proton pump inhibitors, including lansoprazole and pantoprazole are safe and effective for the treatment of dyspepsia in children and adolescents with improved pain in more than 70% of patients.[19]

Celiac Disease: A gluten-free diet should be initiated.

Children with inflammatory bowel disease should be referred to a pediatric gastroenterologist for anti-inflammatory medications and biologics.[20]

Chronic Constipation: Treatment includes dietary interventions, such as increased fluids, fiber, and prune, pear, and apple juices; behavioral interventions, including regular toilet time for five or 10 minutes after meals and use of stool diaries; reward systems; and parental education.[21]

Conclusion

The main aim of management of children with RAP is to teach the child to cope with the pain and to improve the child's quality of life. A multidisciplinary team approach is the most ideal in dealing with this type of complex problem. Medical treatment with GI prokinetic or antispasmodic medications has been proven to be disappointing. Both the child and the parents should be counselled on stress coping

strategies and provided with ample reassurance that there is no serious organic disease.

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