

Original Research

Etiological Spectrum of Recurrent Abdominal Pain in Preschool Children: A One-Year Comprehensive Investigation Reveals a Predominance of Non-Organic Causes

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Abstract

Background: Recurrent abdominal pain (RAP) is a common concern affecting preschool children, impacting their daily activities. This one-year study, conducted from March 2017 to February 2018, aimed to explore the etiological spectrum of RAP in this age group, with a specific focus on differentiating between organic and non-organic causes.

Methods: Eighty preschool children presenting with RAP were enrolled in the study. A comprehensive investigation included thorough interviews, physical examinations, and initial blood, urine, and stool evaluations. Additional diagnostic modalities, such as abdominal ultrasonography, radiography, and endoscopy, were employed. Data analysis involved both descriptive and inferential statistics to categorize and understand the distribution of organic and non-organic causes.

Results: Among the 80 preschool children investigated, 37.5% exhibited organic causes, with urinary tract infections (UTIs) being the most prevalent (20%), either alone or coexisting with other parasitic infections. Non-organic causes dominated, comprising 62.5% of cases. Psychosocial factors, including school phobia, sibling rivalry, and familial discord, were identified as significant contributors to RAP.

Conclusion: This comprehensive one-year study reveals a notable predominance of non-organic causes of recurrent abdominal pain in preschool children. UTIs were the leading organic cause, while psychosocial factors emerged as significant influencers. These findings underscore the importance of considering both medical and psychosocial aspects in the evaluation and management of RAP in this age group. Further research and instrumental support are warranted to enhance our understanding and refine therapeutic approaches for preschool children with recurrent abdominal pain.

INTRODUCTION

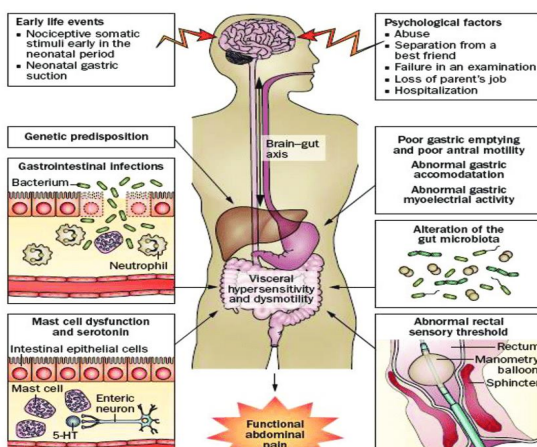
Recurrent abdominal pain (RAP) constitutes a significant pediatric challenge encountered in daily medical practice, characterized by the manifestation of abdominal discomfort severe enough to disrupt a child's routine activities over a span exceeding three months. Originally delineated by Apley and Naish in the late 1950s, RAP not only poses a clinical conundrum but also

engenders functional impairment and parental anxiety, thereby impinging upon the day-to-day lives of affected children and their families.

The prevalence of chronic abdominal pain in the pediatric population is noteworthy, reported to afflict approximately 10-15% of children¹⁻². RAP, a subtype of abdominal pain, extends its influence over 10-20% of children, emphasizing the

significance of understanding its diverse etiological landscape ¹³⁻⁵. Within this spectrum, the distribution of organic and non-organic causes exhibits variability across different studies ⁶⁶. Uncommonly observed after the age of 14, the onset of RAP symptoms in children under 4 years necessitates a meticulous exploration of potential organic origins. Emotional components, including stressful events, sibling rivalry, school phobia, and strained parental relations, have been identified as contributory factors, particularly in cases of non-organic RAP ¹⁴⁻⁹.

Organic etiologies such as H. Pylori infection, parasitic infestations, and cholelithiasis have also been implicated in the manifestation of RAP, further complicating the diagnostic landscape ¹⁰. Given the variability in reported prevalence rates of organic and non-organic causes in the existing literature, this study seeks to contribute valuable insights by delving into the etiological spectrum of RAP in preschool children aged 2-6 years. By focusing on this younger age group, often underrepresented in existing research primarily centered around older children (5-12 years), our investigation aims to discern the nuanced factors contributing to RAP in its early developmental stages. Through a one-year comprehensive examination, we endeavor to shed light on the prevalence and nature of both organic and non-organic causes, thereby enhancing our understanding of this prevalent pediatric ailment.



Source: Google

Objectives

General Objective: To comprehensively investigate the etiological spectrum of recurrent abdominal pain in preschool children in Bangladesh, with a specific emphasis on delineating between organic and non-organic causes.

Specific Objectives:

- To meticulously identify and categorize the specific causes contributing to recurrent abdominal pain in preschool children within the context of Bangladesh.
- To explore and elucidate the various factors associated with the occurrence of recurrent abdominal pain in preschool children in the Bangladeshi population, including both organic and non-organic contributors.

Material and Methods

Study Design: This cross-sectional study was conducted at Dhaka Shishu (Children) Hospital in Dhaka, Bangladesh, spanning from March 2017 to February 2018.

Study Population: The study included 80 preschool children aged between 2 to 6 years, presenting with recurrent abdominal pain at Dhaka Shishu Hospital. The participants were within the age range of 4 to 6 years and had a primary complaint of intermittent abdominal pain lasting for more than three months. The pain was of sufficient severity to disrupt normal activities, such as missing school or interrupting routine daily activities.

Inclusion Criteria: Children meeting the following criteria were included:

1. Primary complaint of unexplained intermittent abdominal pain lasting more than three months.
2. Pain severity sufficient to impact normal activities.
3. Age between 4 to 6 years.

Diagnostic Criteria: The terms "functional" or "nonfunctional" were applied when no organic

etiology could be identified. Diagnosis of Recurrent Abdominal Pain (RAP) required:

1. Demonstration of an organic cause.
2. Clinical and laboratory response to treatment.
3. Remission from abdominal pain for at least three months post-treatment.

Investigations: All participants underwent a detailed history and physical examination, along with:

1. Complete hemogram
2. Urine analysis
3. Stool examination for common bacterial pathogens, ova/cysts, and occult blood.
4. Special investigations (chest and abdomen X-rays, abdominal ultrasonography, EEG, serological tests for tuberculosis, upper gastrointestinal endoscopy, and barium study) were performed as indicated.

Treatment and Follow-up: Children with identified organic causes received appropriate treatment and were followed for at least 3 months. Those with non-organic RAP (NORAP) underwent detailed family history assessment and counseling.

Statistical Analysis: Data analysis was conducted using a Stata version 13 for windows, incorporating appropriate statistical tests to derive meaningful insights from the study findings.

Result

The study encompassed 80 preschool children experiencing recurrent abdominal pain (RAP), revealing a notable male predominance with 46 (57.5%) males. The age distribution showed that 34 (42.5%) children were in the 2 to 4 years group, while the remainder belonged to the 4 to 6 years group.

The etiological spectrum of RAP was explored, uncovering both organic and non-organic causes. Among the participants, 30 (37.5%) had organic causes, with urinary tract infections (UTIs) being the most prevalent at 20%. Additional organic causes included Giardiasis, Ascariasis, Shigellosis, abdominal tuberculosis, gastritis,

chronic constipation, gallstones, and abdominal epilepsy. Non-organic causes predominated, constituting 62.5% of cases. Stressful life events, such as financial problems, school phobia, death of the father, divorce, child anxiety, and unpleasant relations among parents, were assessed. Financial problems were more prevalent in the non-organic group (60%) compared to the organic group (10%).

Table 2 highlighted the association of psychosocial factors with non-organic RAP. Factors such as school phobia, sibling rivalry, unpleasant relations among parents, divorce, and nocturnal enuresis were significantly associated with non-organic RAP. For instance, school phobia was present in 35% of the non-organic group compared to 12% in the organic group.

the study provides a comprehensive understanding of the etiological spectrum of recurrent abdominal pain in preschool children, emphasizing the prominence of non-organic causes and the interplay of psychosocial factors. The association of stressors with non-organic RAP underscores the need for a holistic therapeutic approach encompassing both medical and psychological interventions. The findings highlight the importance of tailored interventions based on individualized etiological factors contributing to recurrent abdominal pain in this age group.

Table 1: Distribution of Stressful Life Events in Children and Their Families (n=80)

Stress Factors	Non-Organic (N=50)	Organic (N=30)
Financial Problems	60%	10%
School Phobia	35%	12%
Death Of Father	5%	5%
Divorce	20%	5%
Child Anxiety	55%	25%
Unpleasant Relations among Parents	12%	5%

Discussion

Recurrent abdominal pain (RAP) in pre-school children remains a challenging symptom to understand, and its etiology continues to be

elusive despite advances in medical knowledge and technology. Our study, focusing on children aged 2 to 6 years, sheds light on the intricate nature of RAP and challenges the traditional perception that it predominantly stems from psychosocial factors.

Table 2: Causes of Recurrent Abdominal Pain (RAP) in Preschool Children (n=80)

Age Group	2-4 years		4-6 Years		Total
	Boys	Girls	Boys	Girls	
Organic Causes (30) 37.5%					
Giardiasis (17%)	2	1	1	1	5
Shigellusis (10%)	1	1	0	1	3
Ascariasis (13%)	0	1	2	1	4
UTI (20%)	1	2	1	2	6
Abd. Tuberculosis (3%)	0	0	0	1	1
Gastritis (13%)	2	1	0	1	4
Chronic Constipation (13%)	0	1	2	1	4
Gall Stones (3%)	0	0	0	1	1
Others (HSP Recurrent) (3%)	0	0	0	1	1
Abdominal Epilepsy (3%)	0	0	1	0	1
Total	6	7	7	10	30
Non-Organic Causes (50) 62.5%					
	12	8	20	10	50
Sub Total	18	15	27	20	80

As far back as 1909, an English pediatrician acknowledged the complexity of colicky abdominal pain in childhood, a sentiment that persists to this day.¹¹ Apley proposed that RAP is often a manifestation of physiological maladjustments in response to family or school issues in predisposed children. However, our findings, in line with several contemporary studies, challenge this notion by revealing that organic causes of RAP are more prevalent than previously believed. In our study, 37.5% of cases were attributed to organic causes, a percentage significantly higher than the 8% reported by Apley¹².

The increase in the identification of organic causes in our study may be attributed to the utilization of advanced diagnostic technologies such as endoscopy, ultrasonography, and barium studies. Despite increased access to these investigations,

a substantial proportion of our subjects fell into the functional group, indicating the persistent challenge in understanding and categorizing the etiology of RAP¹³.

Upper gastrointestinal endoscopy emerged as a valuable diagnostic tool, revealing gastritis in some cases, with three patients testing positive for *Helicobacter pylori* infection. While *H. pylori* has been considered an uncommon cause of RAP in children, our findings suggest its significance in certain cases.¹³⁻¹⁴ Additionally, giardiasis, a parasitic infection, was identified in five patients and effectively managed with metronidazole.

Our study highlights the diversity of organic causes contributing to RAP, with urinary tract infections (UTIs) being the most common. This finding contrasts with some studies but aligns with others emphasizing the variability in the incidence of specific organic causes. Abdominal tuberculosis, esophagitis/gastritis, and gallstones were also identified as contributors to RAP in our study, further emphasizing the multifaceted nature of the condition.

Comparing our results with previous studies, we observed a higher percentage of children with organic causes, suggesting the importance of considering geographical and demographic variations in the prevalence of different etiological factors. Psychogenic causes, though acknowledged in some studies, constituted a smaller proportion in our findings, underscoring the complexity of differentiating between organic and non-organic origins of RAP¹⁵⁻¹⁶.

Our study adds to the evolving understanding of RAP in pre-school children, emphasizing the need for a comprehensive and multidisciplinary approach in both diagnosis and management. The integration of advanced diagnostic methods, coupled with an awareness of regional variations, is crucial in unraveling the intricacies of RAP and tailoring effective interventions for affected children. Further research is warranted to refine our understanding of the interplay between organic and psychosocial factors in the manifestation of

recurrent abdominal pain in this vulnerable population.

Limitations of the study

This single-center study conducted at Dhaka Shishu (Children) Hospital, Bangladesh, possesses inherent limitations that impact the generalizability of findings. The exclusive focus on a single medical center limits the ability to extrapolate the study's outcomes to the broader national context, thereby restricting the representation of diverse scenarios within the country. Furthermore, the study acknowledges the constraint of a small sample size, which, while offering valuable insights, may not fully mitigate potential biases inherent in a more extensive and heterogeneous study population. Therefore, caution is warranted when interpreting and applying the study's findings on the etiology of recurrent abdominal pain in preschool children to the entire country.

Conclusion and recommendations

In conclusion, this study provides valuable insights into the complex landscape of recurrent abdominal pain (RAP) in preschool children. The prevalence of organic causes, particularly urinary tract infections, challenges traditional views emphasizing psychosocial factors. However, the single-center design and small sample size limit the generalizability of findings to the broader national context. Further research with larger, diverse populations is essential to refine our understanding of RAP etiology in preschool children on a broader scale. Given the limitations, we recommend multi-center studies across diverse regions of Bangladesh to capture the full spectrum of RAP etiology. Increasing sample sizes and employing a more comprehensive range of diagnostic methodologies will enhance the robustness and applicability of future research. Additionally, ongoing collaboration between medical and psychosocial disciplines is crucial to unravel the nuanced interplay between organic and non-organic factors contributing to recurrent abdominal pain in this vulnerable population.

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