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Original Article

Clinico-Etiological Profile of Children Suffering with Recurrent Abdominal Pain in a Tertiary Care Centre of Western Uttar Pradesh, India

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Abstract

Introduction: Abdominal pain is one of the most encountered problems in paediatrics, which baffles the experienced paediatrician, disturbs the parents, and adversely affects the quality of life of a child. This study was planned to find the prevalence, clinical spectrum, and etiological profile of recurrent abdominal pain in western Uttar Pradesh, India.

Methods: An observational descriptive study was conducted from October 2019 to October 2020 at a tertiary care hospital. All children attending the Paediatric OPD between the age group of four to 16 years, suffering from recurrent abdominal pain were included in the study. Detailed history and examination of each patient were recorded on predesigned pretested performa.

Results: The prevalence of recurrent abdominal pain (RAP) was found 0.34%, and approximately 2/3rd of RAP cases were from the adolescent age group (11 - 16 years). A strong association between a non-vegetarian diet and junk food was found with RAP ($P < 0.05$). A significant correlation was found between school absenteeism and RAP ($P = 0.0027$). It was observed that approximately 61% of the cases experienced pain for an average of one to two episodes per week and one to three hours per episode. We observed that localization of pain in the majority of cases was diffuse 30 / 75 (40%), and 67% of the children were found to have an organic cause of RAP ($P = 0.0041$). IBS and functional dyspepsia were contributing major causes of non-organic RAP.

Conclusions: RAP has significant prevalence among children. Junk food and non-vegetarian diet was significantly associated with RAP. Major causes of non-organic RAP were IBS and functional dyspepsia. Dietary modification and personal hygiene may play a significant role as a preventive measure for RAP.

Introduction

Abdominal pain is one of the most common symptoms in children. The causes are varied ranging from gastrointestinal (GI), and extra-intestinal causes to functional abdominal pain.[1] Recurrent Abdominal Pain (RAP) in children was defined by Apley in 1958 as "at least three episodes of abdominal pain severe enough to affect daily activities over a period longer than three months."[2] Although RAP was considered a functional disorder rather than an organic disease, affected children and their fami-

lies can still experience anxiety and concerns that can interfere with school, sports, and regular daily activities and lead to frequent attendances at paediatric emergency departments or paediatric gastroenterology clinics. The management of this syndrome remains a time-consuming and frustrating clinical challenge for most physicians and gastroenterologists.[3]

European and American community-based epidemiological studies have found prevalence rates of RAP varying between 0.5% and 19%.[3] Recent studies have found pathological causes in up to 30% of RAP cases.[4] In the present-day Western setting, irritable bowel syndrome is the commonest cause of functional RAP in children, accounting for 52% of cases.[5] RAP is reported in 10-12% of school-aged children in developed countries.[6] Epidemiological studies in Asia have reported similar prevalence.[7,8] An organic lesion is present in 5 to 10% of the children. RAP has been found to be common in the setting of school phobia, sibling rivalry, and a family history of multiple abdominal complaints, psychological problems, and disturbed interpersonal relationships.[9,10]

Cohort studies from India and Pakistan suggest that RAP is most likely to have an organic cause (up to 82% of cases), with giardiasis being the most common underlying condition. Asian studies suggest gastrointestinal infections, such as giardiasis, are common causes of recurrent abdominal pain, but that functional abdominal pain is also prevalent.[11,12] There are limited studies on the subject in the western region of UP, hence, this study is planned to find the prevalence and clinic-etiological profile of recurrent abdominal pain in western Uttar Pradesh, India.

Methods

This was an observational descriptive study, held from october 2019 to October 2020 at a tertiary care hospital in western Uttar Pradesh, India after getting ethical approval from the Institutional review Committee. All children attending the Paediatric OPD between the age group of four to16 years, of either sex, suffering from RAP were included. Patients falling out of the specified age limit, patients who refused to give consent for the study, history of major gastric surgery, children with abdominal trauma, children with congenital malformation, and children with neurological disorders were excluded. RAP was defined as per Apley's criteria (i.e., at least three episodes of abdominal pain, severe enough to affect daily activities, over a period longer than three months). Functional abdominal pain was described as per Rome III criteria. Children and their parents / guardians were well explained about the study and written informed consent was obtained from them. Detailed history, examination, and laboratory findings of patients were recorded on predesigned performa. Observations were analyzed using SPSS 22.0, and the mean difference between the two groups was determined by using the student t-test and Chi-square test. The level of significance was set at $p < 0.05$.

Results

In our study, a total of 21,848 patients of age group four to 16 years attended Paediatric OPD over the one year study period, in which 5054 (23.1%) children had complaints of abdominal pain and 75 (0.34%) patients were diagnosed with RAP and enrolled in the study. The prevalence of abdominal pain in paediatric patients (Four to 16 years) visiting tertiary care hospitals was 23.1%, while the prevalence of RAP was found to be 0.34%. The majority of RAP cases 23 / 75 (30.7%) were belonging to 11 to 13 years of age and the age group of four to six years recorded the least number (17.3%). The age group affected most (60%) was between 11 to 16 years. Slight female preponderance (51%) was noted in the prevalence of RAP ($P > 0.05$) [Table 1]. It was observed that the maximum number of cases 32% ($N = 24$) belonged to poor socio-economic status (Kuppuswami class IV). A positive family history of RAP was present in 14.6% of cases.

Table 1- Age and gender-wise distribution

Age (Years)	Male	Female	No of cases (%)
4 - 6	9	4	13 (17.3%)
7 - 10	10	7	17 (22.7%)
11 - 13	10	13	23 (30.7%)
14 - 16	8	14	22 (29.3%)
Total	37 (49%)	38 (51%)	75 (100%)

Children with a non-vegetarian diet had a higher incidence of RAP i.e., 60% ($P < 0.05$). While 57 / 75 (76%) of the children with RAP were regularly (> 3 times / week) taking junk food ($P < 0.05$). Almost 2 / 3rd (68%) of children in the current study experienced the loss of school days (minimum 1 day) and it equally affected both the males and the females ($P < 0.05$). 61% of the cases experienced pain for a duration of one to three hours per episode. The frequency of abdominal pain in the majority of children (61.3%) was one to two episodes per week.

Almost 37% of the children in our study could not describe the character of pain they perceived, in others the pain was dull aching (17.4%), colicky (16.0%), burning (13.3%), sharp (8.0%) and bloating (8.0%). Localization of pain in the majority of cases was diffuse 30 / 75 (40%), followed by upper abdomen 24 / 75 (32%) and peri-umbilical 16 / 75 (21.3%). [Figure 1]

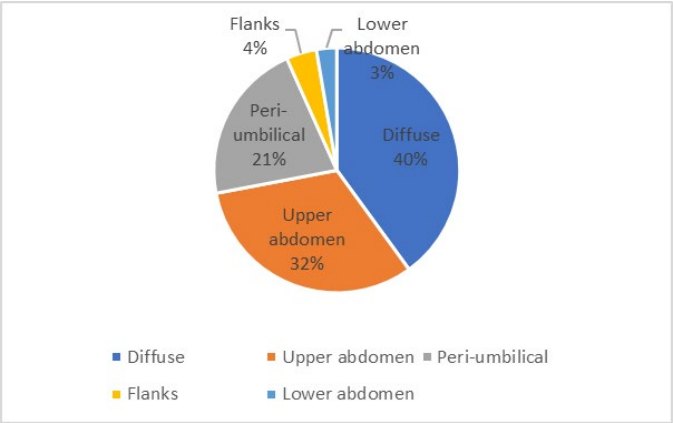

Figure 1: Localisation of pain in children with RAP

Associated symptoms were nausea (45.3%), vomiting (34.6%), loss of appetite (29.3%), heartburn (22.6%), dysuria and fever (20% each), headache (16%), diarrhea (13.3%) and bleeding per rectum (9.3%).

Organic causes of RAP were found in 67% (50/75) of the children, and 33% were found to have a non-organic cause ($P < 0.01$). Chronic constipation (20%), giardiasis (12%), and gastroesophageal reflux disease (12%) were common organic causes of RAP. [Table 2]

Table 2: Organic causes of RAP

Diagnosis	No.of cases (N = 50)	Percentage	P- Value
Chronic constipation	10	20	0.4571
Worm infestation (Giardiasis)	6	12	0.4621
Gastro-esophageal reflux	6	12	0.4621
Abdominal tuberculosis	5	10	0.6412
Mesenteric lymphadenitis	4	8	0.6412
Peptic ulcer disease	3	6	0.6412
Chronic liver disease	3	6	0.6998
Urinary tract infection	3	6	0.6998
Renal calculus	2	4	0.7011
Liver abscess	2	4	0.7011
Pancreatitis	2	4	0.7011
Chronic appendicitis	1	2	0.7558
Celiac disease	1	2	0.7558
Cholecystitis	1	2	0.7558
Ulcerative Colitis	1	2	0.7558

The non-organic causes of RAP were found in 25 / 75 (33%) cases. Irritable Bowel Syndrome (IBS) was found the most common (36%) cause of FGID. While functional dyspepsia was diagnosed in 28% of children. 24% of children were having childhood functional abdominal pain. 12% were diagnosed with abdominal migraine. [Figure 2]

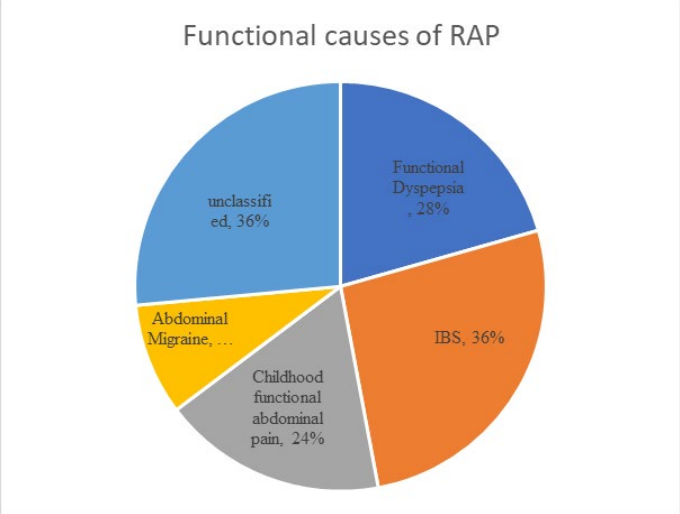

Figure 2: Abdominal pain

Upper GI endoscopy showed positive findings in 10 (13.3%) cases. Out of which six cases were having GERD, three patients were diagnosed with peptic ulcer disease, and one patient with celiac disease.

Discussion

The prevalence of RAP in the general population shows variable ranges from different studies. In our study, the prevalence of RAP was found 0.34%. Similarly, in a study done by Peterson S et al on school children, it was found that the prevalence rate of RAP was between 0.5 - 19%.[3] Study by Wadhwa N et al on-school children in Delhi, India reported the prevalence of RAP to be 14.6%.[13]

60% of cases of RAP were from the adolescent age group in this study. Similar to our finding, Wadhwa N et al found the maximum prevalence of RAP in 10 to 12 years of age. Whereas, the study by Bandyopadhyay A et al in Kolkata, India observed that the four to six years children had maximum prevalence of RAP cases.[14]

A higher incidence of RAP was found to be associated with a low socio-economic status population in the present study. This finding is also in concordance with the findings of Boey et al.[7] The present study revealed that 14.6% of cases had a positive history of RAP in the family which seems to be strongly associated with the incidence of RAP in children. This is also supported by the study by Robinson J et al which had found that if parents have a history of RAP, especially abdominal migraine, then children are more likely to develop RAP.[15]

We observed a significant correlation between junk food and a non-vegetarian diet with RAP ($P < 0.05$). Similarly, in a study by Chouliaras G et al in Greek, it was found that increased junk food consumption was related to a higher likelihood of functional GI disorders.[16] A significant correlation between school absenteeism and RAP is also found in our study ($P < 0.05$) while in a study conducted by Boey et al, it was found that there was no significant difference in the scholastic performance in children suffering from RAP than the normal population.

In our study, it was observed that 61% of the cases experienced pain for a duration of one to three hours per episode of abdominal pain. Whereas, in the study by Walker et al, the duration of pain / discomfort was transient (less than one hour duration) in 27% to 39% of patients and lasted at least most of the day in up to 36% of the children.[17] Similarly, a study conducted by Dutta S et al in Delhi, India, also observed the maximum number of cases complained of abdominal pain of five to 30 minutes per episode.[18] In the present study, we found that the majority (61.3%) of children had abdominal pain on an average of one to two episodes per week. In concordance to our findings, Walker et al also mentioned that between 79% and 85% of patients reported pain / discomfort at least once a week.[17]

In this study, the localization of pain in the majority of cases was diffuse 30 / 75 (40%), followed by upper abdomen 24 / 75 (32%) and peri-umbilical 16 / 75 (21.3%) region. Whereas, in a study by Dutta S et al, from Delhi, India, the most common site of pain was peri-umbilical. Similarly, in a study done by Wadhwa N et al from Delhi, India, peri-umbilical pain was observed in 73.1% of the cases.

We also observed that other symptoms associated were nausea 34 / 75 (45.3%), vomiting 26 / 75 (34.6%), loss of appetite 22 / 75 (29.3%), heartburn 17 / 75 (22.6%), dysuria, fever 15 / 75 (20% each), headache 12 / 75 (16%), diarrhea 10 / 75 (13.3%) and bleeding per rectum 7 / 75 (9.3%). While in a study done by Singh MK et al, in Patna, India, the commonest symptoms associated with RAP were headache (43%), anorexia (35%), lethargy (23%), joint pain (23%), nausea (22%) and vomiting (18%).[19]

In the current study, we observed that 50 / 75 (67%) of the children were found to have organic causes of RAP, probably due to the availability of paediatric gastroenterologists and advanced investigation modalities at tertiary care center. Buch NA et al found that up to 82% of the cases were organic in origin. In a study conducted by Bandyopadhyay A et al in Kolkata, India, 88% of cases were found to be of organic origin. All these studies point towards the fact that organic causes are more prevalent than non-organic causes of RAP, so we should investigate the patient in detail before labeling it as functional abdominal pain. Common disorders associated with RAP in our study were chronic constipation (20%), giardiasis (12%), and GERD (12%), whereas a study conducted by Balani B et al from, Delhi, India found giardiasis to be the most common cause.[20] A study by Bandyopadhyay A et al had also found giardiasis to be the most common cause of organic RAP.

The non-organic cause in the current study was found in 25 / 75 (33%) cases of RAP. IBS was the most common cause of FGID. Whereas, in a study done by Walker et al using ROME II criteria, the following results were found: IBS 44.9%; functional dyspepsia 15.9%; functional abdominal pain 7.5%; abdominal migraine 4.7%.

This study does have some limitations. This is a single centric study with limited number of children. Hence generalisation of the results may not be feasible. It is recommended that further, larger, mutli-centric studies should be conducted on RAP to conclude further into this enigmatic topic.

Conclusions

Abdominal pain is a very frequently encountered problem in children, which is significantly associated with school absenteeism and frequent visits to clinicians. Dietary habits like frequent intake of junk food and non-vegetarian food play an important role in RAP occurrence. RAP is an umbrella term that includes various underlying etiologies. Organic etiologies are frequently associated with RAP. Chronic constipation, giardiasis, GERD, peptic ulcer disease and abdominal tuberculosis are frequently associated conditions with RAP.

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References

1. Quek SH. Recurrent abdominal pain in children: a clinical approach. Singapore Med J. 2015;56(3):125-132. DOI:10.11622/smedj.2015038 PMID:25820843 PMCID:PMC4371190

2. Apley J, Naish N. Recurrent abdominal pains: a field survey of 1,000 school children. Arch Dis Child. 1958;33(168):165-170. DOI:10.1136/adc.33.168.165 PMID:13534750 PMCID:PMC2012205

3. Petersen S, Brulin C, Bergström E. Recurrent pain symptoms in young schoolchildren are often multiple. Pain. 2006;121(1-2):145-150. DOI:10.1016/j.pain.2005.12.017 PMID:16473464

4. Croffie JM, Fitzgerald JF, Chong SK. Recurrent abdominal pain in children--a retrospective study of outcome in a group referred to a pediatric gastroenterology practice. Clin Pediatr (Phila). 2000;39(5):267-274. DOI:10.1177/000992280003900502 PMID:10826073

5. Chitkara DK, Rawat DJ, Talley NJ. The epidemiology of childhood recurrent abdominal pain in Western countries: a systematic review. Am J Gastroenterol. 2005;100(8):1868-1875. DOI:10.1111/j.1572-0241.2005.41893.x PMID:16086724

6. Huang RC, Palmer LJ, Forbes DA. Prevalence and pattern of childhood abdominal pain in an Australian general practice. J Paediatr Child Health. 2000;36(4):349-353. DOI:10.1046/j.1440-1754.2000.00513.x PMID:10940169

7. Boey CC, Goh KL. Recurrent abdominal pain and consulting behaviour among children in a rural community in Malaysia. Dig Liver Dis. 2001;33(2):140-144. DOI:10.1016/S1590-8658(01)80069-4 PMID:11346142

8. Schurman JV, Friesen CA, Danda CE, Andre L, Welchert E, Lavenbarg T, et al. Diagnosing functional abdominal pain with the Rome II criteria: parent, child, and clinician agreement. J Pediatr Gastroenterol Nutr. 2005;41(3):291-295. DOI:10.1097/01.mpg.0000178438.64675.c4 PMID:16131983

9. Berger HG. Somatic pain and school avoidance. Clin Pediatr (Phila). 1974;13(10):819-826. DOI:10.1177/000992287401301004 PMID:4415810

10. Buch NA, Ahmad SM, Ahmed SZ, Ali SW, Charoo BA, Hassan MU. Recurrent abdominal pain in children. Indian Pediatr. 2002;39(9):830-834. PMID:12368527

11. Younas M, Shah S, Talaat A. Frequency of Giardia lamblia infection in children with recurrent abdominal pain. J Pak Med Assoc. 2008;58(4):171-174. PMID:18655423

12. Sathiyasekaran M. Management of Recurrent Abdominal Pain: Have we Reached the end of the Tunnel?. Indian Pediatr. 2015;52(10):841-842. DOI:10.1007/s13312-015-0729-4 PMID: 26499004

13. Nishant W, Sibal A. Recurrent Abdominal Pain Among Children Attending Government and Private Schools in Delhi. Apollo Medicine. 2007;4(4):334-338. DOI:10.1016/S0976-0016(11)60470-5

14. Bandyopadhyay A, Mandal PK. Recurrent abdominal pain in children and adolescents: a hospital based study. Int J Contemp Pediatrics. 2017 Mar. DOI:10.18203/2349-3291.ijcp20170924

15. Robinson JO, Alverez JH, Dodge JA. Life events and family history in children with recurrent abdominal pain. J Psychosom Res. 1990;34(2):171-181. DOI:10.1016/0022-3999(90)90051-5 PMID:2325001

16. Chouliaras G, Kondyli C, Bouzios I, Spyropoulos N, Chrousos GP, Roma-Giannikou E. Dietary Habits and Abdominal Pain-related Functional Gastrointestinal Disorders: A School-based, Cross-sectional Analysis in Greek Children and Adolescents. J Neurogastroenterol Motil. 2019;25(1):113-122. DOI:10.5056/jnm17113 PMID:30646482 PMCID:PMC6326206

17. Walker LS, Greene JW. Children with recurrent abdominal pain and their parents: more somatic complaints, anxiety, and depression than other patient families? J Pediatr Psychol. 1989;14(2):231-243. DOI:10.1093/jpepsy/14.2.231 PMID:2754574

18. Dutta S, Mehta M, Verma IC. Recurrent abdominal pain in Indian children and its relation with school and family environment. Indian Pediatr. 1999;36(9):917-920. PMID:10744872

19. Singh MK, Sinha SK. Etiology of recurrent abdominal pain in children. Int J Med Health Res. 2017: 147-151.

20. Balani B, Patwari AK, Bajaj P, Diwan N, Anand VK. Recurrent abdominal pain--a reappraisal. Indian Pediatr. 2000;37(8):876-881. PMID:10951636