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Recurrent Abdominal Pain in Children; Role of Psychological Intervention in Functional Abdominal Pain

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Abstract

Background: *Abdominal pain is a common health problem of pediatric age group. The pain may have underlying disease or may be functional. Functional abdominal pain has major impact on children and their families and if untreated may persists into adult life. Psychotherapy can improve functional abdominal pain. This study evaluates the physical factors behind recurrent abdominal pain in children and role of cognitive behavioral therapy in functional pain disorder.*

Materials and methods: *A total of 140 children of 4 to 15 years with recurrent pain in abdomen admitted in Dr M R Khan Shishu Hospital were enrolled in a case control study. Detailed history was taken following thorough physical examination. Complete blood count, urine and stool routine examination and ultrasonogram of whole abdomen were done in all cases. Further investigations were done upon clinical suspicion like stool OBT, SGPT, serum Amylase, Lipase, tissue transglutaminase, tuberculin test, plain X-ray abdomen, upper GI Endoscopy. When organic pathology was found, that was treated. Children fulfilling the ROME IV criteria for functional abdominal pain were considered to have non- organic (functional) pain. Children having functional pain were divided into 2 groups. Some children received cognitive behavioral therapy, were taken as case and those who did not willing to receive psychotherapy were taken as control. Both groups were followed up after 6 months and improvement was noted.*

Results: *Among total 140 children, male were 58% and female 42%. Maximum children (44%) were between 8 to 11 years of age. Common organic causes of pain were constipation (37.35%), urinary tract infection (21.69%), peptic ulcer disease (15.66%), appendicitis (10.84%), cholecystitis (6%). Functional abdominal pain was found in 57(41%) cases. Among them 22 children received short term cognitive behavioral therapy and 18 did not. Children received cognitive behavioral therapy, improved significantly after 6 months in context of reduced pain frequency, improved appetite and good school performances than those who did not receive therapy.*

Conclusion: *Constipation, urinary tract infection, peptic ulcer disease are common organic causes of abdominal pain. Functional abdominal pain is a predominant cause of recurrent abdominal pain that is significantly ameliorated by cognitive behavioral therapy.*

Key words: *Recurrent Abdominal pain, functional abdominal pain, cognitive behavioral therapy.*

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Introduction:

Recurrent Abdominal pain (RAP) is common in children and adolescents. The problem is frequently encountered by general physicians, pediatricians and surgical specialists.[1] It is defined as at least 3 separate episodes of abdominal pain in children of 4 to 16 year of age that occur over a period longer than 3 months

and episodes may be severe enough to hamper the normal activities of the child.[2,3] Clinically, these episodes are characterized by vague abdominal pain that is dull or crampy, usually periumbilical and persist for less than 1 hour. The pain frequently associated with nausea, vomiting and other autonomic signs.[4,5] Often the term is misused for chronic but in RAP each episode of pain is distinct and separated by periods of well-being. [6] In 1958, at first a study revealed 10.8% prevalence of RAP among British School children.[6,7] Since then, it has been studied all over the world and showed prevalence of 12% in Australian children, 9.6% in urban and 11% in rural school children in Malaysia. [1,3,6,8] In Bangladesh the prevalence is 11.5% among school children.[1,9]

Recurrent Abdominal pain is a symptom not a diagnosis. There may be underlying pathology or may be functional. Before 80's it was thought that abdominal pain was mainly psychogenic or functional. Apley and Nash failed to identify an organic pathology in about 90% cases of recurrent abdominal pain.[4] Recent studies from India and Pakistan indicate that most of the RAP have organic causes (up to 82%).[10] They found giardiasis as the commonest cause while in Srilanka commonest organic cause was constipation.[11]

Children with RAP frequently experience interference with daily activities, such as school abstinence, withdrawal from sport activities, mood disturbances (anxiety, depression) and disruptions in peer relationships.[12] While RAP is not associated with any identified organic disease, it is generally accepted that biological abnormalities (visceral hyperalgesia, gut dysmotility) likely interact with psychological factors (life stress) to contribute to abdominal discomfort.[1,12,13] Although there is not much information about the long-term outcome of RAP in children, some evidence suggests that if RAP is untreated, they may persist into adult life and sometimes develop chronic abdominal pain or other pain disorder, as well as psychological disorders in later life. [14,15] For functional abdominal pain, psychological treatments primarily cognitive-behavioral therapy (CBT), have emerged as effective management option. [12,15] CBT which is delivered by a trained psychologist consists of techniques that help children and parents to cope with the pain and alter environmental factors that serve to reinforce the pain behavior.[15] Our study objectives were to identify organic causes of RAP and to evaluate the effect of short-term psychotherapy on functional abdominal pain.

Materials and method:

It was a case control study carried out in Dr M R Khan Shishu Hospital over a period of 1 year 6 months from January 22 to June, 2023. Our study population was children of 4 to 15 years who attended our outpatient department due to recurrent abdominal pain. Sample size was 140, which was determined according to the 10% prevalence rate of abdominal pain in Bangladeshi children. Sampling was random and purposive. After taking a written informed consent patients were enrolled for the study. Then detailed history was taken regarding symptoms, frequency and duration of pain, food habit, bowel habit, associated symptoms like nausea, vomiting. Also, sociodemographic profile, development, personal and family history, school performances, loss of school days due to illness were recorded. Thorough physical examination was done. Surgical consultation was taken whenever required. CBC, Urine and stool routine examination and Ultrasonogram of whole abdomen were done in all cases. Further investigations were done upon clinical suspicion like stool for OBT, SGPT, serum Amylase, Lipase, tissue transglutaminase, plain X-ray abdomen, upper GI endoscopy.

Functional abdominal pain was defined according to Rome IV diagnostic criteria for childhood functional abdominal pain which includes "episodic or continuous abdominal pain that does not occur solely during physiological events such as eating and menses, insufficient criteria for other functional gastrointestinal disorders including irritable bowel syndrome, functional dyspepsia, or abdominal migraine and after appropriate evaluation, the abdominal pain cannot be fully explained by another medical condition." [16.17] Children, identified as having functional abdominal pain were categorized into 2 groups. Parents willing to have psychotherapy for pain management were sent to a trained psychologist for cognitive behavioral therapy and these children were taken as case group. Control was taken from those children whose parents denied for psychotherapy. Control group were counselled by the authors for pain management. Both the groups were followed up after 6 months and the effect of cognitive behavioral therapy was evaluated. Data was recorded in a semi structured manner. Data were analyzed by SPSS version 21 for windows. P value <0.05 were taken as significant.

Results:

Age of the study population was 4 to 15 years. Children were divided into 3 groups according to their age.

Forty-five (32%) children were in 4 to 7 years age group, 62(44%) in 8 to 11 years and 33 (24%) in 12 to 15 years age group. Among 140 study population, male was 81(58%) and female 59 (42%). Male to female ratio was 1.39:1. One hundred and ten children (78.57%) came from urban area and 30 (21.43%) from rural area. According to the family income children were divided into 3 groups. Twenty-eight (20%) children came from lower income family (less than taka 15,000/month), 68(48.57%) from middle income family (taka 15,000 to 30,000 per month) and 44 (31.43%) from higher income family (taka more than 30,000/month). Table I shows the demographic characteristics of the study population.

Table I

Demographic characteristics of the study population (n=140)

Demographic Characteristics	No (%)
Age (years)	
4 to 7	45(32)
8 to 11	62 (44)
12 to 15	33 (24)
Sex	
Male	81(58)
Female	59 (42)
Residence	
Urban	110 (78.57)
Rural	30 (21.43)
Family income (taka/ month)	
<15000	28(20)
15000- 30000	68(48.57)
>30000	44(31.43)

Out of 140 study population, 83(59%) children had organic pathology and 57(41%) had no organic pathology. Most common organic cause was constipation 31(37.35%), followed by urinary tract infection 18(21.69%), peptic ulcer disease 13(15.66%), appendicitis 9(10.84%), cholecystitis 5(6.02%), mesenteric lymphadenitis 4(4.82%), pancreatitis 2(2.4%) and abdominal tuberculosis 1(1.21%). (Figure 1)

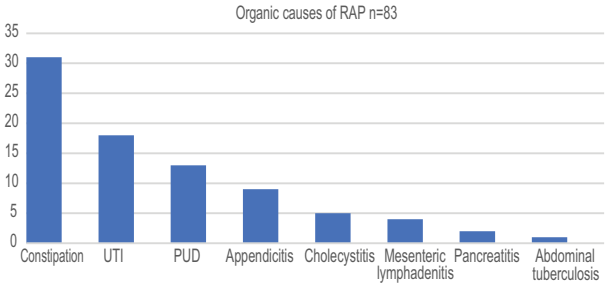

Fig.-1: *Organic causes of recurrent abdominal pain in children.*

Total 57(41%) children, who had no organic pathology and met ROME IV criteria were considered as having functional abdominal pain. Parents of these children were counselled to receive cognitive behavioral therapy for their children. Out of them 22(38.59%) agreed to go to a trained psychologist for cognitive behavioral therapy (CBT) and we took them as case group. Among the rest 35, only 18 (31.57%) parents agreed to come for further follow up and were taken as control group. Cognitive behavioral therapy was not given to the control group, but were counselled for pain management. Both groups were followed up after 6 months and improvement were noted regarding some fixed parameters like pain frequency per month, nausea and vomiting, appetite, mood swings and school performance. Table II showed the effect of cognitive behavioral therapy on children having functional abdominal pain.

Table II

Role of cognitive behavioral therapy (CBT) on children having functional abdominal pain

Parameters	Patients received CBT (n- 22)	Patients did not receive CBT (n-18)	P value
Pain frequency/month	Reduced in 18 Not in 4	Reduced in 10 Not in 8	0.021
Associated factors (nausea, vomiting)	Reduced in 18 Not in 4	Reduced in 10 Not in 8	0.093
Appetite	Improved in 18 Not 4	Improved 9 Not in 9	0.046
Mood swings	Improved 12 Not 10	Improved 6 Not 12	0.216
School performance	Improved 16 Not 6	Improved 6 Not 12	0.024

In case group among total 22 patients who received CBT, pain frequency per month reduced in 18, nausea and vomiting reduced in 18, appetite improved in 18, mood swings improved in 12 and school performance improved in 16 children. In control group among total 18 children, pain frequency per month reduced in 10, nausea and vomiting reduced in 10, appetite improved in 9, mood swings improved in 6 and school performance improved in 6 children. Significant improvement was noticed in CBT group than control group in reduced pain frequency, improved appetite and school performance.

Discussion:

Recurrent Abdominal pain is not a diagnosis, rather a common gastrointestinal symptom. It represents a complex interaction between physical pain sensation and psychological responses to pain, as well as the ecological context in which these interactions occur.[18] Our study population was 140 children of 4 to 15 years. Among them male were 58% and female were 42%. Male to female ratio was 1.39:1. Gender ratio similarity was found in the study done by Saraswat et al. and Alam et al where the ratio was 1.2:1 and 1.3:1 respectively. [19,20] We took age group of 4 to 15 years; where maximum number was found in 8 to 11 years (44%) followed by 4 to 7 years (32%). In Alam et al's study maximum children were between 10 to 12 years (43.14%) followed by 13 to 15 years (32.35%).[20] In context of residence 78.57% children came from urban area which is similar to Alam et al's and Aumi et al's study where urban dwellers were 61.76% and 61.67% respectively. [20,21] In this study maximum children came from middle income family (48.57%) which is consistent with Aumi et al's study (38.33%). [21]

Recurrent Abdominal pain may be caused by some gastrointestinal or non- gastrointestinal causes or may be functional. In our study 59% had organic pathology and 41% had no organic causes. In different studies, the prevalence of functional abdominal pain was 44%, 43.2% and 31% and 28.12% [4,20,22,23]. The common organic causes in our study were constipation (37.35%), urinary tract infection (21.69%) and peptic ulcer diseases (15.66%). In Alam et al study, common organic causes were urinary tract infection (21%) and peptic ulcer diseases (15%).[20] In Ghosh et al study on children of 5 to 16 years common organic causes were urinary tract infection (14%), appendicitis (13.59%) and peptic ulcer diseases (10.73%).[23]

There is globally growing evidence of the efficacy of non-pharmacological interventions such as cognitive-behavioral therapy and family interventions in the treatment of functional pain disorder in children. CBT includes relaxation techniques, imagery exercises, positive self-instructions etc. [15] In this study we found significant reduction in pain frequency, improved appetite and improved school performances in children received CBT than those who did not. Robins et al. reported significant improvement of symptoms and fewer school absences in children with RAP following a short period of cognitive behavioral family treatment.[18] A study by Youssef et al. also demonstrated significant improvement in symptoms in children with chronic abdominal pain following cognitive behavior therapy. [24]

Conclusion:

Constipation, urinary tract infection, peptic ulcer disease are common causes of abdominal pain in children. Pain is often functional that is without any objective evidence of an underlying organic disorder. Functional abdominal pain is a predominant cause of recurrent abdominal pain that can be significantly ameliorated by cognitive behavioral therapy.

Limitations of study:

Cognitive behavioral therapy was given to a small number of children. A larger sample size and long duration follow up could be more informative.

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