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Original Research Article

A Cross Sectional Survey to Assess the Functional Abdominal Pain in Relation to Behavioral Pattern Triggers in Children

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Abstract

Aim: The aim of the study was to ascertain the correlates of functional gastrointestinal disorders (FGIDs) and anxiety in children.

Methods: The present study was conducted in the Department of Pediatrics, Jawahar Lal Nehru medical College and hospital, Bhagalpur, Bihar, India for six months and 50 children who qualified the Rome IV criteria for FAP in whom the clinician, pediatric gastroenterologist excluded organic causes by appropriate blood investigations and imaging (pertaining to individual cases) and endoscopy where appropriate/ indicated and warranted were included in the study.

Results: A total of 50 children diagnosed with FAP completed the study. Thirty tree out of 50 children affected were female. Children were of average IQ level: 1) 56% with average intelligence; 2) 24% with low average (borderline and dull normal) intelligence; 3) 12% with mild mental retardation (i.e., IQ below 70); and 4) 8% with above average intelligence (bright normal). All the children were provided a 5-point Likert scale to assess their current anxiety. Most of the children, 44 out of 50 children, were rated at high and very high, which indicates that they had insight into their anxiety. Out of 44 children, 28 rated high and 16 rated very high anxiety levels.

Conclusion: Children with FAP have variable IQ levels and high anxiety levels. The need for clinicians to counsel parents and children in order to address the stressors at home and school is warranted as this may help in management of FAP in children.

Keywords: Functional abdominal pain, children, Behavioral patterns, CBCL, IQ.

Introduction

Functional abdominal pain disorders (FAPDs) are some of the most commonly encountered disorders in childhood, affecting up to 25% of all children and infants worldwide. [1] Given their biopsychosocial aetiology involving complex interactions within the gut–brain axis, FAPDs are currently referred to as disorders of gut– brain interaction. [2] Furthermore, the gut–brain axis is now accurately referred to as the 'microbiota–gut–brain axis', reflecting an explosion in

our understanding of the magnitude, complexity, role and interactions of the microbial populations hosted within the lumen of the gastrointestinal tract. [3,4]

Akin to adults, paediatric FAPDs are sub classified utilizing the Rome IV criteria into a number of clinically distinct entities, namely irritable bowel syndrome (IBS), functional dyspepsia, abdominal migraine and functional abdominal pain not otherwise specified (FAP-NOS) 4. FAPDs are frequently characterized by the presence of visceral hyperalgesia as well as increased central perception of visceral stimuli leading to disability, which seems to occur as the final outcome of sensitizing psychosocial factors and medical factors superimposed on a background of genetic predisposition and early- life events. Early life is likely to include all childhood and adolescent stages where growth as well as the structural and functional development of organs occurs, although the vulnerability of the gut–brain–microbiota axis seems to be highest during the perinatal period and first years of life. FAPDs are grouped according to symptom profile, which differs based on the section of gastrointestinal tract that is primarily involved or depending on similarities with other conditions such as headache migraine.

When RAP is not associated with a detectable organic issue or pathology, this medical condition can be renamed functional abdominal pain syndrome (FAPS) or, better, according to the recent European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) Rome IV criteria, functional abdominal pain disorders (FAPDs). [5] The diagnostic Rome IV criteria for FAP must be fulfilled for at least 2 months before diagnosis, must be met at least four times per month, and include all of the following: 1) Episodic or continuous abdominal pain that does not occur solely during physiological events such as eating and menses; 2) Insufficient criteria for other functional gastrointestinal (GI) disorders including irritable bowel syndrome, functional dyspepsia, or abdominal migraine; and 3) After appropriate evaluation, the abdominal pain cannot be fully explained by another medical condition.

It is a known fact that psychological factors play an important role in causation and triggering the onset of FAP in children. Studies have shown positive correlation between anxiety and FAP. [6] Anxiety is a normal human emotion which encompasses behavioral, affective and cognitive responses to situations perceived as uncontrollable or unavoidable. In moderation, anxiety stimulates an anticipatory and adaptive response to challenging or stressful events. In excess, anxiety destabilizes the individual resulting in a dysfunctional state. [7] A meta-analysis was done using 13 psychiatric epidemiological studies with a total sample size of 33,572 subjects who met the criteria; door-to-door survey including all age groups showed the prevalence rate at 20.7% (18.7-22.7%) for all neurotic disorders, which was the highest among all psychiatric disorders. [8]

Various researches indicate high anxiety in children with FAP, manifesting mainly as nausea, vomiting, loss of appetite and fussy eating patterns. Most of the investigations done were within normal limits for these children. The prevalence of anxiety disorders in children (especially female children) is high in the current situation due to the numerous pressures, mainly from home and school, and the multiple roles a child has to play in today's world.

The aim of the study was to ascertain the correlates of functional gastrointestinal disorders (FGIDs) and anxiety in children.

Materials and Methods

The present study was conducted in the Department of Pediatrics, Jawahar Lal

Nehru medical College and hospital, Bhagalpur, Bihar, India for six months and 50 children who qualified the Rome IV criteria for FAP in whom the clinician, pediatric gastroenterologist excluded organic causes by appropriate blood investigations and imaging (pertaining to individual cases) and endoscopy where appropriate/ indicated and warranted were included in the study. The minimum duration of the symptoms for the children is 2 months as per Rome IV criteria.

Methodology

A clinical psychologist performed the tests conducted in this study. The study has been approved by institutional ethics committee at study site. Fifty children with FAP as defined by Rome IV were identified and assessed using intelligence quotient (IQ) test and Likert scale. Children with a known cause or previously diagnosed GI disease such as but not limited to gastro-esophageal reflux disease or inflammatory bowel disease, children with age less than 3 years and children above 17 years, and children whose parents did not given consent were excluded from the study.

Data collection

A cross sectional survey method was used to collect data from the children and their mothers. All the participants belonged to middle and high socioeconomic status. All the children were assessed using the Binet Kamat Intelligence Test (BKT) to assess their IQ. The BKT 9 is a well-researched tool to assess intelligence of children from 3 years to 22 years, and it has norms based on Indian students. Child Behavior Checklist (CBCL, Achenback 1972) 10 was provided to the parents mostly mothers to obtain information about the child's social, behavioral and emotional problems.

A 5-point self-reported Likert scale 11 was given to children to rate their anxiety level with 1 being the lowest and 5 being the highest (1: very low, 2: low, 3: normal, 4: high, 5: very high).

Results

Table 1: IQ of Children in Analysis

IQ level	N
< 70 (Mental Retardation)	6
70 - 89 (Dull Normal)	12
90 - 109 (Average)	28
109 - 119 (Normal)	4

A total of 50 children diagnosed with FAP completed the study. Thirty tree out of 50 children affected were female. Children were of average IQ level: 1) 56% with average intelligence; 2) 24% with low average (borderline and dull normal) intelligence; 3) 12% with mild mental retardation (i.e. IQ below 70); and 4) 8% with above average intelligence (bright normal).

Table 2: Likert Score for Analyzing Anxiety Levels

Anxiety score & level	N
5-Very High	16
4-High	28
3-Normal	3
2-Low	3
1-Very Low	0

All the children were provided a 5-point Likert scale to assess their current anxiety. Most of the children, 44 out of 50 children, were rated at high and very high, which

indicates that they had insight into their anxiety. Out of 44 children, 28 rated high and 16 rated very high anxiety levels.

It is observed that children (especially women) were "allowed" to somatize their emotional problems rather than directly act it out. Parents were willing to allow the child to stay at home if she had physical symptoms like nausea or vomiting rather deal with anxiety in the child. Interestingly the children reported that their anxiety levels would reduce if the stressors were addressed. The most common stressors reported by children were related to academic pressure, difficulty to comprehend, need for affection from parents, interpersonal problems at home (frequent arguments between parents, comparison with a brighter sibling) and poor self-esteem.

Discussion

The global prevalence of functional abdominal pain (FAP) disorders is estimated to be 15%. [12] A recent survey conducted in over 800 Indian school children documented that 92.9% of recurrent abdominal pain in children is functional in nature. [13]

Our study supports the existing literature that emotional problems were identifiable more in the female (girls) population compared to boys suffering with FAP. [14] In a study conducted in 6-13-year-old children, 40.7% of anxious children diagnosed with one or more anxiety disorders had symptoms of an FGID when compared to 5.9% of no anxious children with symptoms of an FGID. [15] Conversely in our study, majority of children diagnosed with FAP had high to very high levels of anxiety.

Consistent with previous reports, females reported more frequent abdominal pain than males [16-18] that was associated with a higher prevalence of depression and anxiety. [19] The millennial children have multiple roles to play in school and at home. The quality of life of child is affected owing to undue pressure from parents and school to exceed. In a study conducted by Warschburger et al, children suffering from FGID had lower health-related quality of life (HRQOL) compared to children suffering from organic GI disorders. [20] As is evident from our study, majority (56%) of the subject population had normal intelligence. Parents and the child were informed about his/her IQ. It was observed that when the parents and child were told about the child's intellectual functioning, they were able to feel less stressed, which may be due to the fact that many a times the child may have got less marks than expected. There is a tendency observed in Indian parents to associate intelligence with academic performance. Usually, parents are disappointed when a child gets low marks and all the children expressed their desire to "please their parents with good marks". Parents were less likely to scold/reprimand a child when he/she gets fewer marks when he "is suffering from illness". [21]

The academic pressure on the child was observed to be reduced when the parents knew that the child is intelligent and academic performance is not the only gold standard for intellectual functioning. It is therefore essential that a child presenting with functional GI symptoms be also assessed for IQ. Regarding pediatric patients with below average intellectual functioning, it was observed that parents were willing to accept the child's IQ after counselling. This also reduced the stress on the child because the parents reported to be willing to not exert excess pressure on the child and allow him/her to pursue his/her academic interests; this in turn reduces the stress on the child and reduces the functional GI symptoms. Individual interviews with each child highlighted the need for the parents to be sensitive to their psychological problems.

Brief counselling was given to the parents and children focusing primarily on psycho-

education and supportive counseling; and the need for the parent to identify the source of stressor and provide supportive methods to the children was emphasized. They were counseled about the need to reduce primary reinforcement of the symptom, which increased the probability of the symptoms and to provide positive reinforcement to the child when he/she exhibited adaptive behaviors like eating healthy food, attending school regularly, playing with friends, and verbalizing his/her anxiety. They were also instructed about not to displace their anger on to the child and sort interpersonal problems between them without involving the child and the children were encouraged to use distraction and coping mechanisms.

Conclusion

The study emphasizes the need for parents to understand that there are various psychological stressors impinging on today's children. Pediatricians and gastroenterologists need to be aware of the prerequisite to sensitize parents about psychological stressors on the child. There is also a strong need for clinical psychologists working with children to liaison with pediatricians and pediatric gastroenterologists. It has been observed that the prognosis is far better when psychosocial stressors were identified and professional counselling was given to both the parent and the child suffering from anxiety. Future research should focus on correlation of anxiety, intelligence and effect of various psychosocial stressors in GI disorders in children, with a larger cohort and multi-centric approach.

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