



Clinical and Psychosocial profile of chronic abdominal pain in children aged 5 to 12 years in a tertiary centre

Authors

Dr V. Sureshkumar MD¹, Dr D. Nirmala MD, DM^{2*}, Dr B. Sumathi MD, DM³

¹Assistant Professor of Pediatrics, Institute of Child Health and Hospital for children, Egmore, Chennai 600008

²Professor and Head, Dept. of Pediatric Gastroenterology, Institute of Child Health and Hospital for children, Egmore, Chennai 600008

³Assistant Professor, Dept. of Pediatric Gastroenterology, Institute of Child Health and Hospital for children, Egmore, Chennai 600008

*Corresponding Author

Dr D. Nirmala MD, DM

B4C, Sunshine apartments, 32/72, West Jones Road, West Saidapet, Chennai 600015, India

Email: nirmalanatarajan89@gmail.com, Mobile: 9840151024

Abstract

Background: Chronic or recurrent abdominal pain is a primarily functional disorder that affects 10-15% of the school age children.

Objective: This study was undertaken to looking to the psycho social factors associated with chronic abdominal pain and to study the prevalence of anxiety and depression in children with chronic abdominal pain.

Subjects and Methodology: Children with chronic abdominal pain according to Rome III criteria were subjected to detailed clinical examination and investigations. Children in the case group were divided into organic and non organic. Controls were selected from pain free children. All three groups were subjected to structured psychosocial assessment.

Results: Marital disharmony was noted in 26% of children with non organic chronic abdominal pain-non organic. Corporal punishment was reported in 70% of chronic abdominal pain-non organic. History of psychiatric treatment in family, high scores in Spence children anxiety scale total score and child depression rating scale score were significantly associated with non organic pain. Anxiety was reported in 33% of children with chronic abdominal pain and depression was noted in 22% of children with chronic abdominal pain.

Conclusion: Chronic abdominal pain is significantly associated with adverse psychosocial factors in relation with family and child. There is an association between anxiety and depressive disorders and chronic abdominal pain in these children. Structured psychosocial assessment would be helpful in these patients.

Keywords: Chronic abdominal pain, Psychosocial factors, Anxiety and depression.

Introduction

Chronic abdominal pain is a common problem in pediatric practice. In general, population based

studies suggest that chronic abdominal pain is experienced by 10-12 %¹ of school age children. High prevalence (74%) of non-organic chronic

abdominal pain has been reported in studies from India and the west^{3,4}. Chronic abdominal pain results from a complex interaction between psychosocial and physiological factors via the brain-gut axis. It is also said that emotions, behavior, gut functions and abdominal pain are closely interrelated. This study focuses on psychosocial issues of children with chronic abdominal pain may throw light on etiology of this disorder and inputs for management. This in turn will help the child return to premorbid productive life as early as possible.

Aim

1. To study the psychosocial factors in chronic abdominal pain in children aged 5-12 years in a tertiary referral centre.
2. To study the prevalence of anxiety and depression in chronic abdominal pain in children aged 5-12 years in a tertiary referral centre.

Methods

This was a Case control study done between Dec.2010 – Oct.2011 at the Dept. of Gastroenterology, Institute of Child Health, Child Guidance Clinic, Institute of Child Health, Pediatric medical and surgical outpatient departments, Institute of Child Health. Children aged 5 to 12 years with abdominal pain presenting continuously or intermittently daily for a minimum period of two months (Rome III Criteria) were included in the study. Children with any known physical, psychiatric disease or Mental retardation were excluded. Healthy pain free children in the same age group matched for age and sex and demography were taken as controls. The sample size was calculated as 70 per group. Informed consent was obtained from parents before enrolling their child into the study. Institutional review board clearance was obtained. All children aged 5 to 12 years with chronic abdominal pain as per the above criteria attending the pediatric medicine and surgery outpatient departments were enrolled in the outpatient

department of pediatric gastroenterology after parental consent. Following a detailed history and physical examination, children were subjected to baseline investigations like complete blood count, urine routine and culture examination, stool routine examination, ultrasound abdomen and pelvis, X-ray chest, liver function test, serum amylase. Upper oesophagogastroduodenoscopy was done in all the children and barium study was done when required. Children in the case group were divided into two groups namely chronic abdominal pain-organic and chronic abdominal pain-nonorganic. Only those children who satisfied all the three criteria were classified as chronic abdominal pain-organic:

1. An organic cause was demonstrated
2. There was clinical and laboratory response to treatment.
3. There was sustained clinical remission after treatment for at least three months.

The children who did not satisfy the above criteria were considered to have chronic abdominal pain-non organic³. Both groups were subjected to structured psychosocial assessment. Control group was selected from healthy children with no pain and were subjected to the same psychosocial assessment. Psychosocial assessment includes questionnaire for assessing family and child factors and pediatric symptom checklist-17, Spence children anxiety scale and child depression rating scale. Scales used in the study were validated scales with good psychometric properties. Psychosocial assessment was done by a psychiatrist who was not aware of the status of abdominal pain.^{13,14}

Data were compiled and analyzed using SPSS software 16.0 version. We compared the proportion of organic, nonorganic and control using CHISQUARE test, T-test and ANOVA. We also used MULTIPLE LOGISTIC REGRESSION ANALYSIS to see the significant difference between the associated factors.

Results

Seventy children satisfied selection criteria of which 13 (18.5%) were identified to be suffering from organic causes. Rests of the 57 (81.5%) children were diagnosed to have non- organic or functional cause. Among children with non organic abdominal pain 25 out of 57 children (44%) were diagnosed as functional abdominal pain and 16 (28%) were diagnosed as functional abdominal pain syndrome and 8 children (14%) were diagnosed as functional dyspepsia and irritable bowel syndrome each. Among organic causes (31.1%) were diagnosed as chronic pancreatitis, (15%) were diagnosed as abdominal tuberculosis and ulcer dyspepsia each. Henoch schlein purpura, urinary tract infection, inflammatory bowel disease and peptic ulcer were the cause of abdominal pain each in one case

Nearly two-third of children with chronic abdominal pain in the non organic group and 90% of chronic abdominal pain in the organic were more than 8yrs of age. In age group less than 8yrs there was a male preponderance and in children more than 8yrs sex distribution was equal. The mean age of non organic group was 9.61(SD-1.934), mean age of organic group was 10.31 (SD- 1.494) and mean age of control group was 10.04 (SD- 1.605)

Most of the children in all the three groups were from urban areas studying in state board schools. Most of the parents belong to lower socio economic status as reflected by education and occupation.

The demographic data of all three group namely chronic abdominal pain-non organic, chronic abdominal pain- organic, and control were similar. There were no significant differences noted with respect to, sex, location, education, parental education and occupation. 39 children (69%) of chronic abdominal pain- non organic group reported pain around umbilicus and 34 children (60%) reported dull pain and in 55 children (96.5%) pain was intermittent. 79% of non organic children returned to normal in between the episodes and there was an association with other

pain like headache and limb pain in 36% and school abstinence was noted in 54% of children belonging to the non organic group. 7 children (54%) reported pain away from the umbilicus signifying Apley's criteria. 10 children (77%) reported pain to be of specific character and in 8 (62%) of children did not have normalcy in between the episodes.

Pain that wakes the child from sleep (nocturnal pain) was noted in 10 (77%) children with organic abdominal pain and one third of children with chronic abdominal pain organic had objective weight loss and one fourth of them had short stature.

3 children with chronic abdominal pain- non organic group had only one biological parent, significant illness proceeding one year was noted in 6 (10.5%), death in the family in the last one year was noted in 9 (16%) , chronic abdominal pain in family was noted in 10 (18%), frequent quarrelling in the family (marital discord) was noted in 26 (46%), family separation was reported in 2 children, psychiatric treatment in family was noted in 2 , magical/religious treatment in family was noted in 6 (11%), alcohol dependence was noted in 28 (49%) and tobacco dependence was noted in 15 (26%) children belonging to non organic group

Protected parenting was noted in 20 (35%) of chronic abdominal pain- non organic group, corporal punishment was noted in 40 (70%) , sibling rivalry was noted in 35 (61%) , school refusal was noted in 15 (26%), frequent absenteeism was noted in 19 (33%) , punishment in school was noted in 13 (23%), failure in subject was noted in 15 (26%) children, lack of participation in sports and bullying was noted in 8 (14%) children belonging to non organic group.

Pediatric symptom checklist - 17, Spence children anxiety scale, child depression rating scale scores (Table 1) Non organic group had a significantly high score in all scales. The mean score of pediatric symptom checklist - 17 total score was 5.05 in the non organic group (organic- 1.92, control- 1.97). In Spence children anxiety scale,

non organic group scored high with a mean total score of 18.58 (organic- 9.08, control- 3.86). Mean separation anxiety score was 5.33(organic- 2.46, control- 1.62), physical injury mean score was 3.6 (control- 1.15, organic- 3.15), generalized anxiety score mean was 3.19 (control- 1.06, organic- 1.31), the mean child depression rating scale score was 17.61 for non organic group (control- 14.79, organic- 16.23).

In nonorganic group 18 children (33%) scored more than 2659 (total score and in child depression rating scale, 12 (22%) scored more than 2060. Using multiple logistic regression analysis frequent quarrelling, corporal punishment, and, significant scoring in Spence children anxiety scale-total score and child depression rating scale were found to be significant in non organic pain.

Table 1 showing Mean and SD for scores in all three groups

S.No	Scores	Non Organic		Organic		Control	
		Mean	SD	Mean	SD	Mean	SD
1	Pediatric symptom checklist - 17 -I	0.95	1.381	0.23	0.599	0.68	1.059
2	Pediatric symptom checklist - 17-A	2.07*	2.652	1.00	1.915	0.64	1.066
3	Pediatric symptom checklist - 17 -E	2.07*	2.945	0.69	1.377	0.71	1.144
4	Pediatric symptom checklist - 17 -T	5.05*	5.266	1.92	2.985	1.97	3.09
5	Separation anxiety score	5.33*	3.888	2.40	1.808	1.62	2.765
6	Social phobia score	2.96*	3.576	1.38	2.468	0.00	0.00
7	Obsessive compulsive score	2.07*	2.419	0.23	0.832	0.00	0.00
8	Panic/ agoraphobia score	2.25*	2.281	0.46	0.877	0.01	0.118
9	Physical injury score	3.60*	3.401	3.15	3.625	1.15	1.866
10	Generalized anxiety score	3.19*	3.528	1.31	1.797	1.06	1.799
11	Spence children anxiety scale total score	18.58*	13.550	9.08	8.808	3.86	6.158
12	Child depression rating scale score	17.61*	3.468	16.23	2.204	14.79	1.768

*Significant when compared with control (sig value < 0.005)

Discussion

Chronic abdominal pain is a significant public health problem. Our centre receives at least 15-20 children per week, which constitutes 12.5% of the Gastroenterology Outpatients. These children live in a different psychosocial environment both at school and home, which may play a critical role in the genesis or persistence or aggravation of pain in these children.

This study has revealed 81% (57 children) of children with chronic abdominal pain were non organic and 19% were of organic cause. This is similar to the study done by S. Dutta et. al³ who reported 74% of children with chronic abdominal pain were nonorganic. Our study has revealed that 44 % (25 cases) of children with chronic abdominal pain (non organic) were diagnosed as functional abdominal pain as per Rome classification. Devanarayana et.al. reported functional abdominal pain in 71% of cases¹² and Boey et.al reported that Irritable Bowel Syndrome

constituted 52% of chronic 51 abdominal pain-non organic², but in our study only 14% with non organic group were diagnosed as Irritable Bowel Syndrome.

In our study chronic abdominal pain was found to be more common in the 9 to 12 years. Similar findings were reported by Jacob oster MD et al⁶ and John Apley et al¹. Our study has revealed equal gender distribution of chronic abdominal pain as against female predominance reported by Jacob oster MD et al⁶ and John Apley et al¹. Bharat Balani et.al.⁹ reported male predominance in his work. According to our study, children belonging to all three group viz non organic, organic and control were from same socioeconomic strata and parental education background. Hence there is no selection bias. This may partly be due to the fact that our centre is a tertiary care centre serving as a referral hospital. If a similar study is done in district headquarters hospital, findings may vary.

The abdominal pain around umbilicus and its dull nature in non organic group was found to be statistically significant when compared with organic group thus signifying Apley's law. Similar findings were shown by Robert T Stone et.al¹⁰ who reported periumbilical pain in 52(49%) of children with chronic abdominal pain and Deepak Bansal et.al¹¹ who reported periumbilical pain in 80% of children with chronic abdominal pain. However these findings go against S.Dutta et al's study³ who reported that pain characters by themselves could not differentiate organic from non organic cases. Red flag signs are very useful screening tools for organic cause, particularly sleep interference(nocturnal pain), returning to normality in between episode, weight loss, and short stature were statistically significant pointers towards organic cause. These findings were replicated in work of Robert T Stone et.al.¹⁰

The questionnaire used for assessing psychosocial factors was constructed by a child psychiatrist and all the scales used in study were translated in to local language for standardized administration to reduce observer bias. In our study no significant statistical differences were found with respect to family type and birth order between three groups, similar to that of S.Dutta et al³.

Frequent quarrelling in family and was found to be statistically associated with non organic pain in our study. These findings were in accordance with that of study done by S. Dutta et al³. Although factors like alcohol dependence, tobacco dependence, psychiatric treatment in family, magical belief and religious treatment in family, significant illness and death in family were higher for non organic group, they were statistically non significant. Presence of a history of chronic abdominal pain in other family members was not found to be statistically significant with our study group. so modeling effect may not play a major role as against the findings of S.Dutta et al³, and Niyaz et.al⁷. Corporal punishment had statistically association with non organic pain which was also reported by S.Dutta et al.^{3,9}

However sibling rivalry, school punishment, failure in subjects, school absenteeism, protected parenting, bullying and lack of participation were not statistically significant even though they were noted more in non organic group than other groups. S. Dutta et al³ agrees with sibling rivalry and failure in subjects but disagrees with school punishment and school absenteeism as associated factors. .However Niyaz et.al⁷ reported single parent, sibling rivalry, school phobia and nocturnal enuresis were associated with non organic pain.

The study also revealed higher mean scores of pediatric symptom Checklist - 17 total score, separation anxiety, social phobia, obsessive compulsive, panic/ agoraphobia, physical injury, generalized anxiety, Spence children anxiety scale total score and child depression rating scale scores in non organic group which were found to be statistically significant when compared with controls. This is in accordance with studies done by John V Campo et al⁵ and Garber et al⁸. The Spence children anxiety scale total score and child depression rating scale score were found to have strong association with non organic pain.¹⁰

In this study prevalence of anxiety was found to be 33% and depression to be 22%. This is lower than what was revealed by John V Campo et al⁵ and Garber et al⁸. who reported anxiety in 80% of children and depression in 40% of children with chronic abdominal pain.

Our study has revealed results that are consistent with many similar studies done in other parts of world and in India on chronic abdominal pain and also certain differences.

Conclusion

1. Chronic abdominal pain is significantly associated with adverse psychosocial factors in relation with family and child.
2. There is an association between anxiety and depressive disorders and chronic abdominal pain in these children.
3. Structured psychosocial assessment would be helpful in evaluation of these children

as biopsychosocial factors play a major role in planning an appropriate and adequate intervention.

No Grants

References

1. Apley J, Nash N. Recurrent abdominal pains, A field survey of 1000 school children. Arch Dis Child. 1958; 33: 165-170.
2. Boey CC, Yap S, Goh KL. The Prevalence of recurrent abdominal pain in 11-16 year old Malaysian school children. J Pediatr Child Health 2000;36:114-116.
3. S. Dutta, M. Mehta and I.C. Verma. Recurrent Abdominal Pain in Indian Children and its Relation with Social and Family Environment. Indian Pediatrics 1999;36: 917-920.
4. Croffie JM, Fitzgerald JF, Chong SK. Recurrent Abdominal Pain in children-a retrospective study of outcome in a group. Clinical pediatrics Child Health 2000;39:267-274.
5. John V. Campo, Jeff Bridge, Mary Ehmann, Sarah Altman, Amanda Lucas, Boris Birmaher, Carlo Di Lorenzo, Satish Iyengar and David A. Brent Recurrent Abdominal Pain, Anxiety, and Depression in Primary Care Pediatrics 2004;113:817.
6. Jacob oster MD Recurrent Abdominal Pain, Headache and limb pains in children and adolescents. Pediatrics; vol 50; no 3: 429.
7. Niyaz, A. Buch et.al. Recurrent Abdominal Pain in children. Indian pediatrics; 39; Sep 2002; 17: 832-842.
8. Judy Garber Ph.D., Janice Zeman M.S., Lynn S. Walker Ph.D. Psychopathology of Recurrent Abdominal Pain. J Am Acad Child Adolesc Psychiatry 1990; 29:648-656.
9. Bharat Balani, Recurrent Abdominal Pain Indian Pediatrics 2000 vol 137; 17: 876.
10. Robert T. Stone and Barbero. G Recurrent abdominal pain in Childhood. Pediatrics 1970;45:732.
11. Deepak Bansal, V.K. Anand. H.pylori infection in Recurrent abdominal pain Indian pediatric 1998; 35:329-324.
12. Devanarayana NM, De sliva GDH, De sliva HJ. Aetiology of Recurrent Abdominal Pain in a cohort of Sri Lankan children. J Pediatr Gastroenterol 2011; 54:154-161.
13. Karen M Shanahan, Joanna zolkowski et.al reliability and validity of child depression rating scale. Clinical paediatrics may 1987; Vol26(5):245-247.
14. Baldwin. J.S, and Dadd MR reliability and validity of parent and child version of multi dimensional anxiety scale for children in community survey. Journal of American Academy of child and adolescent psychiatry 2007; 46(2):252-260.