ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 49. 23
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 4, Issue – 2, April - 2019, Page No. : 132 – 136

Functional Pain Abdomen in Children: Epidemiology and Etiopathology

Neeraj Ramchandani [1], R.K. Soni[2], Pawan Dara [3], Laxman Siddh[4]

[1] Resident Doctor, [2] Senior Professor, [3-4] Assistant Professor

Department of Paediatrics, S.P. Medical College, Bikaner

Corresponding Author: R. K. Soni**,** Senior Professor, Deptt. of Paediatrics, S.P. Medical College, Bikaner, Rajasthan.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: Chronic abdominal pain is one of the most common problem dealt in day to day practice by paediatricians. In most of these children, no cause can be identified. Although it is common but its definition, pathophysiological mechanisms and predisposing factors are not completely understood & there is need for large well performed clinical trials for evidence based treatment.

Methods: Hospital based prospective case control study conducted at Department of Paediatric Medicine, Sardar Patel Medical College and P.B.M. Hospital Bikaner.

Results: Out of 150 cases, 100 (66%) children were among 5-10 yrs age group, while 50 (33%) children were among 11-15 years. 106 (70.7%) children belong to lower middle class, followed by 35 (23.3%) children in upper middle class while 9 (6%) children belong to upper lower class. Cases were classified according to ROME III criteria. According to clinical symptoms and investigations, 79 (52.6%) children had symptoms suggestive of IBS, 39 (26%) children had Dyspepsia, 15 (10%) children had Functional pain abdomen, 5 (3.3%) children had FAPS, 2 (1.3%) children had Giardiasis, 2 (1.3%) children had right ovarian cyst, 3 (2%) children had coeliac disease, 3 (2%) children had cystitis and 2(1.33%) children had gastritis.

Conclusion: This study reports higher prevalence of FGIDs in children with RAP and also identifies the variables associated with increased risk of these disorder in children with RAP. FGIDs were present in 93% children with RAP. Female gender, school going children, psychological stress, traumatic life event and lower socioeconomic status increase the prevalence.

Keywords: Recurrent abdominal pain (RAP), Functional abdominal pain (FAP), Chronic abdominal pain.

Introduction: Chronic and recurrent abdominal pain in children did not receive much attention in paediatric literature before the late 1950s[1]. In 1958 Apley and Naishe published results from a population-based study of schoolchildren, and introduced the term “recurrent abdominal pain” (RAP) defined as at least three episodes of pain, severe enough to affect activities, over at least three months in the preceding year[2]. This definition soon became common in use and has been applied in clinical paediatric practice and research since then. With enhanced knowledge and understanding, both clinicians and researchers have recognised weaknesses with this term that RAP is a description, not a diagnosis. The definition is wide and general and includes heterogeneous disorders of abdominal pain, including those with organic and non-organic etiology. The vast majority of children and adolescents with RAP have non-organic abdominal pain[3]. This heterogeneity of RAP has made research and treatment difficult. To make a distinction from organic disease, the term “functional gastrointestinal disorders” (FGIDs) has been established. These are chronic or recurrent gastrointestinal symptoms not explained by structural or biochemical abnormalities[4]. The term “functional abdominal pain” (FAP) encompasses the pain related FGIDs[4].

Chronic abdominal pain is one of the most common problem dealt in day to day practice by paediatricians. In most of these

children, no cause can be identified. Although it is common but its definition, pathophysiological mechanisms and predisposing factors are not completely understood & there is need for large well performed clinical trials for evidence based treatment.

Material and Methods

Study Design: Hospital based prospective case control study.

Study duration: 12 months (January 2018 to December 2018).

Study place: Department of Paediatric Medicine, Sardar Patel Medical College and P.B.M. Hospital Bikaner.

Study Population: All children aged 5 to 15 years in routine OPD and indoor patient fulfilling the inclusion criteria.

Sample size: The review of literature shows prevalence of RAP 9 to 15%. In our study we expect prevalence to be around 9%. With allowable error fixed at 20% of prevalence, sample size calculated to be 150.

Sampling method: Convenience sampling

Inclusion criteria

1. Children aged 5 to 15 years.
2. Apley and Naish criteria defined by at least three episodes of abdominal pain severe enough to affect activities over at least 3 months in the preceding year.

Exclusion criteria: Children aged 5 to 15 years with following warning symptoms in childhood:

Method of Study: The study was conducted in Department of Paediatrics, Associated group of hospitals attached to S.P. Medical College Bikaner. The study was commenced after obtaining clearance from institutional ethical committee. Written consent were taken from the parents for this study and those who were not willing excluded from study. Patients of age group 5 to 15 yrs of any gender presenting to paediatrics hospital (who fulfill inclusion and exclusion criteria) with >3 episodes of abdominal pain in preceding year were enrolled for study. For diagnosis of FAP, ROME criteria III will be used. A comprehensive history taking, physical examination and lab investigations were carried out and data was collected in pre-designed performa. Patients were classified according to ROME criteria.

Observations

Table 1:Age wise Distribution of Cases of RAP

	Age Distribution of Cases				
	5-10 yrs		11-15 yrs		Total
Sex	No.	%	No.	%	
Female	67	70.52	28	29.47	95
Male	33	60	22	40	55
Total	100	66.66	50	33.33	150

In the present study, Out of 150 cases, 100 (66%) children were among 5-10 yrs age group, while 50 (33%) children were among 11-15 years.

Table 2:Distribution of Cases According to Socioeconomic Status (Modified Kuppuswamy Scale)

Socioeconomic status	No. of Cases	Percentage
Class1(upper)	0	-
Class 2 (upper middle)	35	23.3
Class 3 (lower middle)	106	70.7
Class 4 (upper lower)	9	6.0
Class 5 (lower)	0	-
Total	150	100

This table shows that 106 (70.7%) children belong to lower middle class, followed by 35 (23.3%) children in upper middle class while 9 (6%) children belong to upper lower class.Children's socioeconomic status was decided by Modified Kuppuswamy Scale.

Table 3: Distribution of Cases According to Detailed Clinical History

Clinical History		No. of Cases	%
Site of Pain	Upper abdomen	108	72
	Lower abdomen	30	20.0
	Generalized	12	8
Frequency/year	3-6	124	82.6
	6-8	22	14.7
	>8	4	2.7
Duration of pain	>25% of the day	92	61.33
	<25% of the day	58	38.66

Association with altered bowel habits	Yes Constipation Diarrhoea	79 45 34	52.66 56.96 43.03
	No	71	47.33
Other somatic symptoms	No	138	92%
	Yes Headache Limb Pain Difficulty in Sleeping	12 7 3 2	8% 58% 25% 17%
Intensity	Moderate	100	66.66
	Severe	38	25.3
	Mild	12	8.0
Interfere with daily activities	No	94	62.66
	Yes	56	37.33
Significant Weight Loss (>10% of body weight)	No	147	98.0
	Yes	3	2.0

This table shows that most common site of pain was upper abdomen present in 108 (72%) children, followed by lower abdomen in 30 (30%) children and generalized pain abdomen in 12 (8%) children.Out of 150 cases 124 (82.6%) children had >3-6 episodes of pain abdomen in preceding year while 22 (14.7%) children had 6-8 episodes and 4 (2.7%) children had >8 episodes. 92 (61.3%) children had duration of pain for >25% of the day while rest of 58 (38.6%) children had duration of pain <25% of the day. Only 56 (33%) children had interference with daily activities during pain abdomen. Out of 150 cases, 79 (52.6%) children had associated altered bowel habits out of which 45 (56.95%) children had constipation while 39 (43.5%) children had diarrhoea and rest 71 (47.3%) children had no alteration in bowel habits. Only 12 (8%) children had other somatic symptoms out of them most common symptom was headache (58%) followed by limb pain (25%) and difficulty in sleeping (17%).

Only 3 (2%) children presented with significant weight loss.

Table 4:Distribution of Cases According to BMI (kg/m^2)

BMI (kg/m^2)	No. of Cases	Percentage
≤18.5	140	93.3
18.51-24.99	10	6.7
≥25	0	-
Total	150	100

This table shows that 140 (93%) children were underweight according to BMI and only 10 (10%) children had normal BMI.

Table 5:Distribution of Cases According to Social Behaviour

Presence of Stressor	No. of cases	Percentage
Yes	47	31.3
No	103	68.7
Total	150	100

In this table 47 (31.3%) children had associated negative life event, while the rest had no associated life stressor.

Table 6:Distribution of Cases According to Upper GI Findings

Upper GI Finding	No. of Cases	Percentage
D2 Mucosa scalloping	3	2.0
Gastritis	2	1.33
Normal study	6	4
Not Done	139	92.66
Total	150	100

Out of 150 cases, upper GI endoscopy done in only 10 children which concluded normal study in 6 (6%) children, gastritis in 2 (1.3%) children and duodenal mucosa scalloping in 3 (2%) children.

Table 7:Distribution of Cases According to Final Diagnosis

Final Diagnosis	No. of Cases	Percentage
Functional	138	92.0
Organic/infectious	12	8.0
Total	150	100

This table shows prevalence of functional GI Disorders in children with RAP. 138 (92%) children had FGIDs while rest 12 (8%) children had organic or infectious aetiology.

Table 8:Distribution of Cases According to Disease

Disease	No. of Cases	Percentage
IBS	79	52.66

Dyspepsia	39	26.00
Functional Abdominal Pain	15	10.00
Functional Abdominal Pain syndrome	5	3.33
Coeliac Disease	3	2.00
Cystitis	3	2.00
Right Ovarian Cyst	2	1.33
Giardiasis	2	1.33
Gastritis	2	1.33
Total	150	100

In this table, cases were classified according to ROME III criteria. According to clinical symptoms and investigations, 79 (52.6%) children had symptoms suggestive of IBS, 39 (26%) children had Dyspepsia, 15 (10%) children had Functional pain abdomen, 5 (3.3%) children had FAPS, 2 (1.3%) children had Giardiasis, 2 (1.3%) children had right ovarian cyst, 3 (2%) children had coeliac disease, 3 (2%) children had cystitis and 2(1.33%) children had gastritis.

Discussion: In present study, children were divided under 2 groups according to age i.e. 5-10yrs and 11 -15 yrs. We found that 2/3 children of our study population were between 5 to 10 years and 1/3 children were above 10 years of age.

There are more than 36 studies done on FAP since 1958 for evaluation of relationship in between age and prevalence of FAP but no data pooled for single age group but some studies have two peaks in prevalence, first below five year age and then between 8 to 10 year age[5].

In our present study, we found Female (63.3%) predominance over males with (female/male ratio 1.7:1). Gender prevalence was found in 24 studies. In 1958 Apley and Naish[5] done a epidemiological study on RAP and found that girls were affected more often than boys. In year 1990 Lundby et al[6] observed that in general there was no significant difference in the frequency of RAP in boys and girls but a preponderance of girls with RAP after the age of ten years were found. Girls have a higher prevalence of FAP than boys (female/male ratio1.4:1) with a female predominance seeming to become evident around puberty.

In the present study, out of 150 cases, 2/3 of children were from families with lower family income. According to Kuppuswamy scale, out of 150 cases, 106 (70.7%) children belong to lower middle class followed by 35 (23.3%) in upper middle class and 9 (6%) in upper lower class. In the year 2000, Boey et al[7] did a study to determine the prevalence of recurrent abdominal pain (RAP) among Malaysian school children aged from 11 to 16 years. They observed that there was higher prevalence of RAP in rural school children (P = 0.008; odds ratio (OR) 1.58), in those with a lower family income (P < 0.001; OR 2.02) and in children whose fathers have a lower educational attainment (P = 0.002; OR 1. 92). There are significant differences in the prevalence of RAP between children from rural and urban schools, among children with different family incomes and among children whose parents have different educational backgrounds, which correlates with our study.

Upper abdominal pain was most common presentation (72%) followed by lower abdominal pain (30%) and 2/3rd of children had longer duration of pain (>25% of the day). Severity of abdominal pain was mild, moderate and severe in 8%, 66.3% and 25.3% respectively. In our study population, 8% children had associated somatic symptoms, out of them most common was headache (58.3%) followed by limb pain (25%). Half of the children had associated alteration in bowel habits out of which 56.9% presented with constipation and 43.5% with diarrhea.

In the year 2002, Abd El-Mageid et al[8] observed that Non-organic RAP was described as mild (68.2%), gradual (64.3%), poorly localized (79.6%) pain, that was experienced more or less on daily basis (79%), and lasts for shorter duration (68.5%) [less than 15 minutes]. It was commonly associated with headaches (46.9%), diarrhea (36.9%), and other pains all over the body (13.4%) Devnarayana et al[21] did a study on 734 children and observed that out of them, 58.4% had periumbilical pain. The severity was mild to moderate in 58.4% and severe in 41.6%. Common associated symptoms were headache (42.9%), anorexia (35.1%), lethargy (23.4%) and joint pain (23.4%).

In our study, we found that out of 150 children, 47 (31.3%) children had associated negative life event in the form of family

problems in 30 (63.8%) cases and school related problems in 17 (36.1%) cases (Table 10). In 1999 Lundby et al[62] investigated frequency of RAP in 664 Danish children and observed that RAP occurred more frequently among children in families with high frequencies of psychosomatic symptoms. In the year 2002, Abd El Mageid[8] did a study to investigate the possible relation between the occurrence of RAP and family and school related problems and observed that RAP was mostly non-organic in origin (65.7%). It was commonly associated with family troubles (59.7%) and school related problems (40.3%). In the year 2005, Chitkara et al[1] did a study about the prevalence, incidence, natural history and co-morbid conditions of childhood RAP in western countries. They concluded that RAP is a common complaint of childhood with associated familial, psychological, and co-morbid conditions. There are numerous studies which showed an increase in prevalence of abdominal pain in children with high stress levels[9-10].

Conclusion: This study reports higher prevalence of FGIDs in children with RAP and also identifies the variables associated with increased risk of these disorder in children with RAP. FGIDs were present in 93% children with RAP. Female gender, school going children, psychological stress, traumatic life event and lower socioeconomic status increase the prevalence.

References

1. Chitkara DK, Rawat DJ, Talley NJ. The epidemiology of childhood recurrent abdominal pain in Western countries: a systematic review. Am J Gastroenterol 2005; 100:1868-75.
2. Di Lorenzo C, Colletti RB, Lehmann HP, Boyle JT, Gerson WT, Hyams JS et al. Chronic Abdominal Pain In Children: a Technical Report of the American Academy of Pediatrics and the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. J Pediatr Gastroenterol Nutr 2005; 40:249-61.
3. Walker LS, Garber J, Van Slyke DA, Greene JW. Long-term health outcomes in patients with recurrent abdominal pain. J Pediatr Psychol 1995; 20:233-45.
4. Walker LS, Lipani TA, Greene JW, Caines K, Stutts J, Polk DB et al. Recurrent abdominal pain: symptom subtypes based on the Rome II Criteria for pediatric functional gastrointestinal disorders. J Pediatr Gastroenterol Nutr 2004; 38:187-91.
5. Apley J, Naish N. Recurrent abdominal pains: a field survey of 1,000 school children. Arch Dis Child 1958; 33:165-70.
6. Lundby L, Sandbaek A, Juul S. Recurrent abdominal pain in schoolchildren 9-12 years of age. Ugeskr Laeger. 1990; 152(39): 2851-4.
7. Boey CC, Goh KL. Recurrent abdominal pain and consulting behaviour among children in a rural community in Malaysia. Dig Liver Dis 2001; 33:140-4.
8. Abd El-Mageid FY, Abou-El Fetouh AM, Abou-Hatab MF. Recurrent abdominal pain among a sample of Egyptian children in relation to family and school related problems. J Egypt Public Health Assoc. 2002;77(1-2):201-23.
9. Boey CC, Yap SB. An epidemiological survey of recurrent abdominal pain in a rural Malay school. J Paediatr Child Health. 1999; 35(3):303-5.
10. Endo Y, Shoji T, Fukudo S, et al. The features of adolescent irritable bowel syndrome in Japan. J Gastroenterol Hepatol. 2011; 26 Suppl 3:106–9.