BANGLADESH J CHILD HEALTH 2017; VOL 41 (1): 4-8

Original Articles

Diagnosis Pattern and Outcome of Adolescents Admitted with Recurrent Abdominal Pain in a Tertiary Care Hospital

HOSSAIN SAHID KAMRUL ALAM[1], MOHAMMED RIZWANUL AHSAN[2], MD. AYNAL HOQUE[3], ABM MAHFUZ HASSAN AL MAMUN[4], SYED SHAFI AHMED[5]

Abstract

Background: *Abdominal pain is very common among children and adolescents. There are many causes of recurrent abdominal pain in children, but parents may find it surprising that it is very common for there to be no clear cause identified for childhood abdominal pain even though examinations and tests have been done.*

Objective*: This study was carried out to identify the demographic profile, causes and outcomes of adolescents admitted with recurrent abdominal pain.*

Methods*: This Retrospective descriptive study was carried out at the Adolescent Unit of Dhaka Shishu (Children) Hospital during the period from 1st October 2015 to 31st March 2017 among 102 adolescents with history of recurrent abdominal pain after following the inclusion and exclusion criteria. Collected data were statistically analyzed with the use of the Statistical Package for Social Science (SPSS) program version 15.*

Results: *Out of 1080 total 102 (9.44%) adolescents were admitted with recurrent abdominal pain of which majority subjects were male (57%). Urban were 61.76% and rest were rural (38.24%). The specific diagnosis pattern revealed that majority had Functional abdominal pain (44.12%) followed by Urinary tract infection (UTI) (20.59%), Peptic ulcer diseases (13.73%), Gastroesophagial reflux diseases (GERD) (11.76%), Abdominal tuberculosis (5.88%), Pelvic inflammatory diseases (4.90%), Cholecystitis (1.96%) and Abdominal migraine (0.98%).*

Conclusion: *Recurrent abdominal pain is common among adolescents. Functional abdominal pain is the most common cause of recurrent abdominal pain. An uniform management protocol should be developed for proper investigations to minimize the cost and for judicious use of drugs in order to help these adolescents with recurrent abdominal pain.*

Keywords: *Adolescents, Recurrent abdominal pain.*

Introduction

Abdominal pain is perhaps the most common painful health problem in school-aged children. Children and adolescents with chronic abdominal pain pose unique challenges to their caregivers. Despite decades of clinical observations resulting in numerous articles, books, and monographs, the subject of long-lasting constant or intermittent abdominal pain in childhood remains one of ambiguity and concern for most pediatric health care professionals. Recurrent abdominal pain (RAP) was originally defined about 50 years ago as three or more bouts of abdominal pain (belly ache) in children 4-16 years old over a three-month period severe enough to interfere with his/her activities.[1] 10% of school aged children get recurrent episodes of abdominal pain.[2] This symptom complex

1. Assistant Professor & In-charge of Department of Adolescent Medicine, Dhaka Shishu (Children) Hospital.
2. Resident Physician & Assistant Professor, Dhaka Shishu (Children) Hospital.
3. Assistant Professor, Dhaka Shishu (Children) Hospital.
4. Resident Medical Officer, Department of Adolescent Medicine, Dhaka Shishu (Children) Hospital.
5. Professor & Head, Department of Pediatric Gastroenterology & Nutrition, Dhaka Shishu (Children) Hospital.

Correspondences: Dr. Hossain Shahid Kamrul Alam, Assistant Professor & In-charge of Department of Adolescent Medicine, Dhaka Shishu (Children) Hospital. E-mail:alamhsk@gmail.com

was named as recurrent abdominal pain (RAP) syndrome and defined it as "at least three episodes of abdominal pain, severe enough to affect their activities over a period longer than three months". [2] RAP is common in children and affects about 10-20% of school-aged children.[3] RAP is reported in 10-12% of school aged children in developed countries.[2,4] Frequent abdominal pain is associated with increased psychological distress, especially with anxiety or depression. Frequently occurring abdominal pain is also related to increased functional impairment in everyday life and to school absence.[5] Boey and his colleagues studied RAP among school children in Malaysia and found a prevalence of 10.2% (urban 8.2-9.6%, rural 12.4%).[6] Similarly, Rasul et al[7] reported RAP in 11.5% of Bangladeshi school children.[7] In the majority of studies, girls are more affected than boys.[8] There are many causes of chronic recurrent abdominal pain in children. But it is very common that no clear cause identified for childhood abdominal pain even though examinations and tests have been done. Psychiatric illnesses in children and adolescents may initially present as somatic complaints.[9] The differential diagnosis of abdominal pain in children varies with age, gender, genetic predisposition, nutritional exposure and many environmental factors.

Material and Methods

This retrospective study was carried out in the Department of Adolescent Medicine of Dhaka Shishu (Children) Hospital, over a period of 1 year and 6 months from October 15 to March 2017. Total 1080 patients were admitted in Adolescent unit during this period of which 102 patients had history of recurrent abdominal pain. These 102 adolescents with history of recurrent abdominal pain were included in the study. Patients were eligible if they were between the ages of 9 and 18 years and had no significant chronic illness or disability by parent report. Each patient was evaluated carefully. A detailed history including presenting complaints, duration of symptoms, socioeconomic status, demographic profile, developmental, personal and family history, school performance and school absences were recorded. Exploration for stressors in the child's domestic or school environment was done. Surgical and other specialist consultation was taken from the appropriate consultant whenever it was required. Relevant investigations as indicated were done to rule out organic illness. Functional abdominal pain was defined as per reference of Schurman et al[10] and diagnosed in children who have chronic (e"2 months) abdominal pain, no alarm findings, normal physical examination, and a stool sample negative for occult blood. The data was recorded on a semi-structured manner. Data were statistically analyzed with the use of the Statistical Package for Social Science program (SPSS version 15.0 for windows, Chicago, IL). The descriptive statistical analysis of the quantitative variables was carried out by calculating the median, mean and standard deviations.

Results

Out of 1080, total 102 (9.44%) adolescents were diagnosed as recurrent abdominal pain in Adolescent Medicine unit of Dhaka Shishu (Children) Hospital from 1st October 2015 to 31st March 2017. Among this 102 study population, male were 58(57%) and female 44(43%) [Fig.-1].

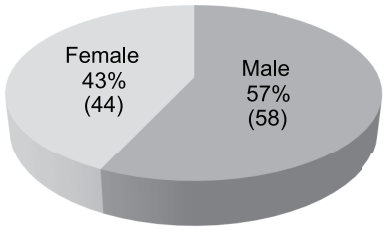

Fig.-1: *Pie diagram of the respondents by sex (n=102)*

Age distribution of the sample shows that most of the respondents 44(43.14%) were in the early adolescent age group of 10-12 years followed by 33(32.35%)in the 13-15 years age group and 25(24.51%) in the 16-18 years age group (Fig.-2).

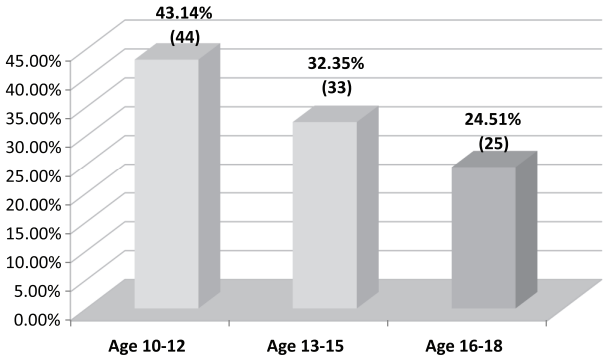

Fig.-2: *Distribution of the respondents by Age group (n=102)*

Out of 102 cases 63 adolescents (61.76%) were from urban and 39 (38.24%) were from rural areas (Fig.-3).

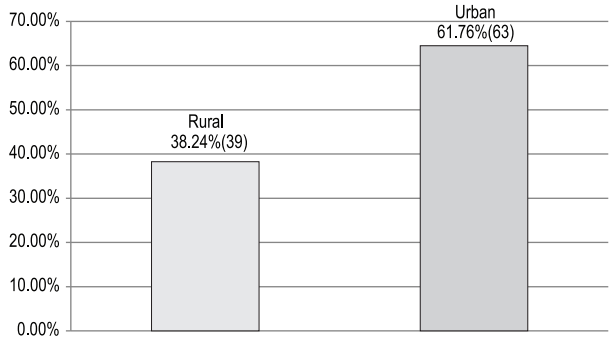

Fig.-3: *Bar diagram of the respondents by Residential Status (n=102)*

The specific diagnosis pattern of these 102 patients with history of recurrent abdominal pain revealed that majority had Functional abdominal pain 45(44.12%) followed by Urinary tract infection (UTI) were 21(20.59%), Peptic ulcer diseases were 14(13.73%) , Gastroesophagial reflux diseases were 12(11.76%), Abdominal Tuberculosis were 6(5.88%), Pelvic inflammatory diseases were 5(4.90%), Cholecystitis were 2(1.96%), and Abdominal migraine was 1(0.98%) [Fig.-4].

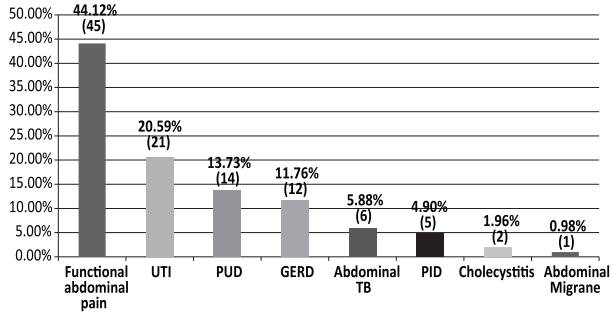

Fig.-4: *Bar diagram of Diagnostic pattern of recurrent abdominal pain (n=102)*

Discussion

Abdominal pain is one of the most common symptoms in children and adolescents. Often, the pain may be due to a number of gastrointestinal (GI) or extra intestinal causes. Apley defined the syndrome of recurrent abdominal pain in childhood as three episodes of abdominal pain occurring in the space of three months, severe enough to affect daily activities.[11] In Apley's original study, the prevalence of recurrent abdominal pain in a population of schoolchildren was 10 %.[11] In subsequent studies using his criteria the prevalence ranged from 11% to 45%.[11-14] The width of this range is probably attributable to differences in age, geographical area and social factors and methodology. Nevertheless, recurrent abdominal pain is clearly no less troublesome now than when Apley described it in 1958.[11] RAP is common in children, and affects about 10%-20% of school-going children.[11] Apley and Naish,[11] who documented RAP in children in the middle of last century, noted that in the vast majority of cases, no organic causes could be found, and they considered the etiology of RAP to be psychogenic in origin.[16] In this study, out of 1080 adolescents of both sex,102 (9.44%) were admitted with recurrent abdominal pain during the study period, which is almost similar to the above studies. Recurrent abdominal pain syndrome has two distinct peaks of frequency. The first peak occurs between five and seven years of age, with equal frequency in boys and girls and in 5 to 8 percent of children. The second peak, with a prevalence approaching 25 percent, occurs between eight and 12 years of age and is far more prevalent in girls.[17,18] In this present study, majority of adolescents 44(43.14%) with recurrent abdominal pain were in 10-12 years (early adolescents) age group with male outnumbering female (male 59.21% and female 40.79%). The reason of this male predominance in this study may be that boys get more preference in our society and they are promptly taken to the health facility whenever they have any health issues, whereas girls get delayed response from their families. The present study shows that majority of adolescents with RAP are from urban population (Urban 61.76% and Rural 38.24%). In this study, the diagnostic pattern of these 102 adolescents with recurrent abdominal pain revealed that majority had Functional abdominal pain 44.12% followed by Urinary tract infection (UTI) 20.59%, Peptic ulcer diseases 13.73%, Gastroesophagial reflux diseases 11.76%, Abdominal tuberculosis 5.88%, Pelvic inflammatory diseases 4.90%, Cholecystitis 1.96% and Abdominal migraine 0.98%. According to Judith et al[19] Functional abdominal pain disorders are a common problem worldwide. In his meta analysis of total 58 articles, including 196,472 children he found that Worldwide pooled prevalence for functional abdominal pain disorders was 13.5% (95% CI 11.8-15.3). The prevalence across studies ranged widely from 1.6% to 41.2%.(10). Like the above mentioned studies the present study shows that Functional abdominal pain

is the diagnosis of majority respondents (44.12%). In a study from Australia, Mitchell et al[20] reported PUD in 5.3 percent of the children who underwent endoscopy for upper GIT complaints; whereas in a report from Greece, Roma et al[21] found PUD in 2 percent of the children who underwent upper GIT endoscopy for various reasons. The 5 per cent prevalence of PUD in this study is clearly within the range reported by others.[22,23] PUD in children is reported worldwide with an estimated frequency of 8.1% in Europe and of 17.4% in the US.[22] The present study also shows the similar result of peptic ulcer disease (13.73%). According to, Winberg et al[23] the prevalence of UTI in children is high, for a peak incidence around the third and fourth year of life. These infections are particularly severe when affecting infants and especially newborn infants. The prevalence of UTI is also higher during adolescence, a period in which hormonal changes favor vaginal colonization by nephritogenic strains of bacteria, which can migrate to the periureteral area and cause urinary tract infection. In this study urinary tract infection is the second leading cause (20.59%) of recurrent abdominal pain among the adolescents. According to Nelson et al[24] between 2000 and 2005, the annual incidence of GERD among infants in the USA more than tripled (from 3.4% to 12.3%), and increased by 30-50% for children and adolescents. In the present study 11.76% of adolescents with recurrent abdominal pain was diagnosed as gastro esophageal reflux disease. Prevalence of abdominal migraine varies from 0.2 to 4.1 % in community studies.[25-29] In hospital-based studies, abdominal migraine is seen in 2.2 to 23 % of children with non-organic abdominal pain.[30-34] Similarly the present study shows that 0.98% of the sample with recurrent abdominal pain was diagnosed as abdominal migraine.

Conclusion

Recurrent abdominal pain is common among adolescents. Functional abdominal pain is the most common cause of recurrent abdominal pain. It is a specific diagnosis that needs to be distinguished from anatomic, infectious, inflammatory, or metabolic causes of abdominal pain. An uniform management protocol should be developed for proper investigations to minimize the cost and for judicious use of drugs in order to help these adolescents.

References

1. Apley J. The Child with Abdominal Pains. 2d ed. Oxford: Blackwell Scientific, 1975.
2. Apley J. The child with recurrent abdominal pain. Pediatr Clin North Am.1967;14 :63-72
3. Gray L. Chronic abdominal pain in children. Aust Fam Physician. 2008;37:398-400.
4. Huang RC, Plamer LJ, Forbes DA. Prevalence and pattern of childhood abdominal pain in an Australian general practice. J Paediatr Child Health. 2000; 36: 349-53.
5. Quek SH; Recurrent abdominal pain in children: a clinical approach. Singapore Med J. 2015;56:125-28.
6. Boey CC, Goh KL. Predictors of recurrent abdominal pain among 9 to 15-year-old urban school-children in Malaysia. Acta Paediatr. 2001; 90: 353-355.
7. Rasul CH, Khan MAD. Recurrent abdominal pain in school children in Bangladesh. J Ceylon Coll Phys. 2000; 33: 110-114.
8. Devanarayana NM, de Silva DGH, de Silva HJ. Recurrent abdominal pain syndrome in a cohort of Sri Lankan children and adolescents. J Trop Pediatr. 2008; 54: 178-83.
9. National Institute of Mental Health Release of Landmark and Collaborative Study Conducted by Harvard University, the University of Michigan and the NIMH Intramural Research Program. www.nimh.nih.gov3. Albrecht S, Naugle AE. Psychological assessment and treatment of somatization: adolescents with medically unexplained neurologic symptoms. Adolescent Medicine. 2002;13: 625-41.
10. Schurman JV, Friesen CA, Danda CE. Diagnosing functional abdominal pain with the Rome II criteria: parent, child, and clinician agreement. J Pediatr Gastroenterol Nutr. 2005;41:291-95.
11. Apley J, Naish N. Recurrent abdominal pains: a field of 1,000 school children. Arch Dis Child. 1958;33:165-70.
12. Macarthur C, Saunders N, Feldman W. Helicobacter pylori, gastroduodenal disease, and recurrent abdominal pain in children. JAMA. 1995;273:729-34.
13. Vandenplas Y, Rudolph CD, Di Lorenzo C. Pediatric gastroesophageal reflux clinical practice guidelines: joint recommendations of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) and European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN). J Pediatr Gastroenterol Nutr. 2009;49:498-47.

14. Tan MLN, Wong S, Srivastava S. Taiwan: 4th World Congress of Pediatric Gastroenterology, Hepatology and Nutrition; 2012. Esinophilic esophagitis in a predominantly Chinese population of children is uncommon. Abstract PP12022.

15. Plunkett A, Beattie RM. Recurrent abdominal pain in children. J R Soc Med. 2005; 98: 101-06.

16. Oh MC, Aw MM, Chan YH, Tan LZ, Quak SH. Epidemiology of recurrent abdominal pain among Singapore adolescents. Ann Acad Med Singapore. 2004;33 (5 Suppl):S10-1.

17. Fleisher DR, Hyman PE. Recurrent abdominal pain in children. Semin Gastrointest Dis. 1994;5:15-19.

18. Gulewitsch MD, Muller J, Enck P. Frequent abdominal pain in childhood and youth: a systematic review of psychophysiological characteristics. Gastroenterol Res Pract. 2014 2014:524383. doi: 10.1155/2014/524383.

19. Spee LAA, Leeuwen YL, Benninga MA, Bierma-Zeinstra SMA, Marjolein Y. Prevalence, characteristics, and management of childhood functional abdominal pain in general practice. Berger Scandinavian Journal of Primary Health Care. 2013; 31: 197-202.

20. Mitchell HM, Bohane TD, Tobias V. Helicobacter pylori infection in children: potential clues to pathogenesis. J Pediatr Gastroenterol Nutr. 1993; 16: 120-25.

21. Roma E, Kafritsa Y, Panayiotou J, Liakou R, Constantopoulos A. Is peptic ulcer a common cause of upper gastrointestinal symptoms? Eur J Pediatr. 2001; 160: 497-500.

22. Guariso G, Gasparetto M. Update on Peptic Ulcers in the Pediatric Age. Ulcers. 2012; 1-9. Article ID 896509. http://dx.doi.org/10.1155/2012/896509

23. Winberg J, Anderson HJ, Bergstrom T, Jacobsson B, Larson H, Lincoln K. Epidemiology of symptomatic urinary tract infection in childhood. Acta Paediatr Scand Suppl. 1974; 252:1-20.

24. Nelson SP, Kothari S, Wu EQ. Pediatric gastroesophageal reflux disease and acid-related conditions: trends in incidence of diagnosis and acid suppression therapy. J Med Econ. 2009;12:348-55.

25. Devanarayana NM, Adhikari C, Pannala W, Rajindrajith S. Prevalence of functional gastrointestinal diseases in a cohort of Sri Lankan adolescents: comparison between Rome II and Rome III criteria. J Trop Pediatr. 2011; 57:34-39.

26. Devanarayana NM, Mettananda S, Liyanarachchi C, Nanayakkara N, Mendis N, Perera N, et al. Abdominal pain-predominant functional gastrointestinal diseases in children and adolescents: prevalence, symptomatology, and association with emotional stress. J Pediatr Gastroenterol Nutr. 2011;53:659-65.

27. Saps M, Nichols-Vinueza DX, Rosen JM, Velasco-Benitez CA. Prevalence of functional gastrointestinal disorders in colombian school children. J Pediatr. 2014;164:542-45.

28. Uc A, Hyman PE, Walker LS. Functional gastrointestinal disorders in African American children in primary care. J Pediatr Gastroenterol Nutr. 2006;42:270-74.

29. Abu-Arafeh I, Russell G. Prevalence and clinical features of abdominal migraine compared with those of migraine headache. Arch Dis Child. 1995;72:413-17.

30. Devanarayana NM, de Silva DG, de Silva HJ. Aetiology of recurrent abdominal pain in a cohort of Sri Lankan children. J Paediatr Child Health. 2008;44:195-200.

31. Carson L, Lewis D, Tsou M, McGuire E, Surran B, Miller C, et al. Abdominal migraine: an under-diagnosed cause of recurrent abdominal pain in children. Headache. 2011;51:707-12.

32. Helgeland H, Flagstad G, Grotta J, Vandvik PO, Kristensen H, Markestad T. Diagnosing pediatric functional abdominal pain in children (4–15 years old) according to the Rome III Criteria: results from a Norwegian prospective study. J Pediatr Gastroenterol Nutr. 2009;49:309-15.

33. Baber KF, Anderson J, Puzanovova M, Walker LS. Rome II versus Rome III classification of functional gastrointestinal disorders in pediatric chronic abdominal pain. J Pediatr Gastroenterol Nutr. 2008;47:299-302.

34. Caplan A, Walker L, Rasquin A. Validation of the pediatric Rome II criteria for functional gastrointestinal disorders using the questionnaire on pediatric gastrointestinal symptoms. J Pediatr Gastroenterol Nutr. 2005;41:305-16.