A study on chronicity and treatment response of functional abdominal pain in 5 to 15 years of children, in relation to size and location of primary mesenteric lymphadenitis in a tertiary care centre

Das Kumar S.¹, Subudhi M.²

¹Dr. Sudhanshu Kumar Das, Associate Professor, Department of Pediatrics, ²Dr. Monalisa Subudhi, Assistant Professor, Department of Microbiology, Gayatri Vidyapahad Institute of Healthcare & Medical Technology, Visakhapatnam, Andhra Pradesh, India.

Corresponding Author: Dr. Monalisa Subudhi, Department of Microbiology, Gayatri Vidyapahad Institute of Healthcare & Medical Technology, Visakhapatnam, Andhra Pradesh, India. E-mail: aryashdas@gmail.com

Abstract

Introduction: Functional abdominal pain (FAP) is one of the most common childhood complaints, an intermittent (recurrent abdominal pain or RAP) or continuous in nature, which cannot be explained by any visible or detectable abnormality, after a thorough physical examination and appropriate laboratory testing. It has negative effects on the child’s physical and psychological state and interfere their daily activities. The present study aimed to find out the chronicity and treatment response of functional abdominal pain in relation to size and site of location of in primary mesenteric lymphadenitis.

Methodology: A prospective study was done on 156 patients, aged 5 to 15 years, in the department of paediatric of GVPMC, Visakhapatnam, AP, a tertiary care hospital, from September 2017 to March 2019. Patient’s demographic profile, clinical features, physical examination and systemic examination were recorded. All the relevant investigations were done in all the patients. For the purpose of the study, all cases were categorised into four group, according to their site of pain. The presence of enlarged mesenteric lymph nodes, their location, size (transverse and anteroposterior dimensions) and other significant findings were recorded. Mesenteric lymphadenopathy was labeled significant using a short axis diameter of >5 mm in short axis diameter. Final diagnosis was established, and patients were followed in OPD. Result: Majority of children presented with abdominal pain, under 5 to 10 years age were female 38(51.35%) and 52 (63.41%) were male under 11 to 15 years. Most common abdominal site of Mesenteric lymph node enlargement was Periumbilical site followed by Right Iliac Fossa. According to the site of pain, Majority of the cases were under group I, 54 (34.61%) and group III, 42 (26.92%). In four groups, all relieved cases had lymph node of size 5mm to 8 mm, except group III 16 (10.25%) cases and all persistent cases, lymph node size more than 8mm, except group II 20 (12.82%). Conclusion: Good approach can be obtained to these cases early and follow up regularly to, modify their painful early school life and assure the parents about the benign nature of the disease.

Keywords: FAP (Functional abdominal pain), Recurrent abdominal pain (RAP), Chronic functional abdominal pain (CFAP)), Mesenteric lymph node (MLN)

Introduction

Functional abdominal pain (FAP) is abdominal pain that cannot be explained by any visible or detectable abnormality, after a thorough physical examination and appropriate laboratory testing. It is one of the most common childhood and adolescent complaints. It can be intermittent (recurrent abdominal pain or RAP) or continuous. Here the gut is more sensitive to some trigger that normally do not cause significant pain, is due to either nerve signals or chemicals secreted by it. Usually, the pain is located around the umbilicus; however, the pattern or location of abdominal pain is not always predictable. Mesenteric lymphadenitis is commonly reported in children with functional abdominal pain [1]. Cluster of three or more enlarged mesenteric lymph nodes that are each 5 mm or greater in the short axis, in the absence of other abnormalities is termed as primary mesenteric lymphadenitis [2].

Primary, mesenteric lymphadenitis is a self-limiting inflammatory condition affecting mostly right-sided mesenteric lymph nodes [3,4,5]. The distribution of pain,
like that of appendicitis, is felt both in the periumbilical region and in the right iliac fossa [6]. Tenderness is maximal in the right iliac fossa but is often present higher up towards the epigastrium. In the current study, our aim is to know, the chronicity and treatment response of functional abdominal pain in relation to size and site of location of primary mesenteric lymphadenitis.

**Materials & Methods**

This study was done prospectively, over a period of two years from September 2017 to August 2019, on 156 patients, aged 5 to 15 years, who attended the OPD with abdominal pain in the department of paediatric of GVPMC, Visakhapatnam, AP, a tertiary care hospital, with institutional ethical approval.

**Inclusion criteria:**

1. Children having at least three episodes of pain that occur over at least three months period and that affect the child's ability to perform normal activities.

**Exclusion criteria:**

1. Recurrent abdominal pain associated with headache, nausea, vomiting, anorexia, altered bowel movement.

2. Features suggestive of underlying organic pathology like - Involuntary weight loss. Falling off growth centiles. Gastrointestinal blood loss. Significant vomiting. Chronic severe diarrhoea.

Unexplained fever, Abnormal physical signs such as pallor, jaundice, guarding, rebound tenderness, altered bowel sounds, or a palpable mass.

Patient’s demographic profile (Name, Age, Sex), clinical features, physical examination and systemic examination were recorded.

**Result**

In the present study, total 156 patients, aged 5 to 15 years, who attended the OPD with abdominal pain in the department of paediatric of GVPMC, Visakhapatnam, AP, from September 2017 to March 2019 were included.

**Table-1: Demographic distribution of study group.**

| Age (Years) | Sex | Total (n=156)(%) |
|-------------|-----|-----------------|
|             | Boys | Girls |                  |
| 5 - 10      | 36(48.64%) | 38(51.35%) | 74 (47.43%) |
| 11-15       | 52(63.41%) | 30(36.58%) | 82 (52.56%) |

Majority of children presented with abdominal pain in the present study group, were female 38 (51.35%) as compared to male 36(48.64%) under 5 to 10 years age. Again, most of the children were male 52 (63.41%) under 11 to 15 years of age group (Table1).
Table 2: Distribution of study group according to Chronicity and Treatment Response in relation to site & size of mesenteric Lymphnode.

| Grou p (n) | Site of Pain | MLN     | Freque ncy(f) | Duratio n each episode | Follow-up period (Acute / Chronic) | Relieved / Persistent |
|-----------|--------------|---------|---------------|------------------------|------------------------------------|-----------------------|
| I (54)    | Epigastric + Peri-umbilical + Hypogastrium RIF | 5-8mm   | 32 (20.5%)    | 1/week                 | 2hr 2m                             | Relieved              |
|           |              | >8mm    | 22 (14.10%)   | 1/week                 | 1dy 4m                             | Persistent            |
| II (35)   | Periumbilical + RIF Umbilical | 5-8mm   | 20 (12.82%)   | 2/week                 | 2dy 6m                             | Persistent            |
|           |              | >8mm    | 15 (9.61%)    | 3/week                 | 18hr 6m                            | Persistent            |
| III (42)  | Periumbilical + & Epigastrium Periumbilical 5-8mm | 26 (16.66%) | 1/week | 18hr 3m | Relieved |
|           |              | >8mm    | 16 (10.25%)   | 3/week                 | 2hr 2m                             | Relieved              |
| IV (25)   | Peri-umbilical + RIF + Left Iliac fossa | 5-8mm   | 15 (9.61%)    | 3/day                  | 2hr 2m                             | Relieved              |
|           |              | >8mm    | 10 (6.41%)    | 3/week                 | 24hr 1yr                           | Persistent            |

Most common abdominal site of Mesenteric lymph node enlargement was Periumbilical site followed by Right Iliac Fossa. According to the site of pain, Majority of the cases were under group I, 54 (34.61%) and group III, 42 (26.92%). In four groups, all relieved cases had mesenteric lymph node of size 5mm to 8 mm, except group III 16 (10.25%) cases, where the size was >8mm with prolonged period of. All relieved cases were acute cases with duration of less than 3month. All persistent cases were more than 6-month duration, with mesenteric lymph node of size more than 8mm, except group II 20 (12.82%) cases with prolonged period of pain (each episode 24 to 48 hours) (Table 2).

Discussion

Chronic functional abdominal pain (CFAP) is the ongoing presence of abdominal pain for which there is no known medical explanation [7]. It is quite similar to, but less common than, irritable bowel syndrome (IBS), and many of the same treatments for IBS can also be of benefit to those with CFAP. The fundamental difference between IBS and CFAP is that in CFAP, unlike in IBS, there is no change in bowel habits such as constipation or diarrhoea. Bowel dysfunction is a necessary diagnostic criterion of IBS.

CFAP is characterized by chronic pain, with no physical explanation or findings (no structural, infectious, or mechanical causes can be found). It is theorized that CFAP is a disorder of the nervous system where normal nociceptive nerve impulses are amplified, resulting in pain. This visceral hypersensitivity may be a stand-alone cause of CFAP, or CFAP may result from the same type of brain-gut nervous system disorder that underlies IBS [8]. In the present study, even though girls were more under 5to 10 years of children, both boys and girls were almost equally affected. Increased prevalence in girls has led to suggestions that levels of sex hormones might play a role in these cases. So also. Ovarian hormones can modulate both visceral pain perception and the susceptibility to stress [9]. Mesenteric lymphadenitis typically occurs in children, adolescents, and young adults of both sexes, although males might be slightly more frequently affected than females [10,11,12]. In the present study, children under 11 to 15 years of age, boys were significantly higher in number than girls. The low incidence of cases in girls, in this age group in my study, could be explained by the fact that, the female child’s nutrition and health may be neglected in our society.

Most common site of pain, in the present study, was periumbilical pain could be due to a number of causes. In several studies, it was found that, the small and large bowel with dysmotility and variations in transit time were documented as common cause of periumbilical pain, [13] Primary or nonspecific mesenteric lymphadenitis has been usually defined as right-sided lymphadenopathy without an identifiable underlying inflammatory cause.

In these patients, there are no further imaging abnormalities, except for a slight thickening of the terminal ileum wall and caecum in a minority of cases, which was found to be the same in the present study [14]. In most cases of mesenteric lymphadenitis, an underlying viral infectious terminal ileitis is thought to be the cause.
Conclusion

By knowing the chronicity and treatment response to FAP, good approach can be obtained to these cases early and will follow up regularly to modify their painful early school life, mental state and the consequences. The present study can assure the parents about the benign nature of the disease

What the study adds to the existing knowledge?

There should be more study on this area of concern required, to approach and to reach a conclusion about how to give a better quality of life to these children.

Author’s Contribution

Dr. Sudhanshu Kumar Das: Manuscript writing.

Dr. Monalisa Subudhi: designed the study, performed the analytic calculations and performed the numerical simulations.

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