

Mesenteric Lymphadenopathy in Children with Chronic Abdominal Pain - A Single Center Retrospective Case Control Study from a Tertiary Care Center in Puducherry

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ABSTRACT

BACKGROUND

Mesenteric lymphadenitis (MLN) is found commonly associated with children having chronic abdominal pain, but its significance is rarely mentioned in literature. Mesenteric lymphadenitis is the inflammation of the mesenteric lymph nodes that drain the gastrointestinal tract. The present study was undertaken to assess the prevalence and significance of mesenteric lymphadenopathy among children with chronic abdominal pain (CAP).

METHODS

This is a single center retrospective case control study conducted in the department of paediatrics of a private medical college in Puducherry. Data was obtained from the records over a period of past 24 months. Cases were defined as 5 - 15 years aged children presenting with chronic abdominal pain. Controls were defined as 5 - 15 years aged children who were subjected to abdominal ultrasonography for reasons other than abdominal pain. Records over past 24 months were studied and for uniformity of analysis, a total of 100 children aged 5 - 15 years, were included in both the groups. Data from the case records was analysed retrospectively to calculate the prevalence of mesenteric lymphadenitis in both the groups.

RESULTS

Chronic abdominal pain was almost equal in both sexes with a male : female ratio of 0.9 : 1. In our study, the incidence of significant MLN among children with chronic abdominal pain was 89 % [n = 89, out of 100 cases] and was 26 % among controls [n = 26, out of 100 controls].

CONCLUSIONS

This study showed that MLN is one of the most common findings in children with CAP with higher incidence among cases than controls and is statistically significant. Abdominal ultrasonography is a useful tool in the evaluation of CAP to rule out organic causes.

KEYWORDS

Chronic Abdominal Pain (CAP), American Academy of Paediatrics (AAP), Mesenteric Lymphadenopathy [MLN], Recurrent Abdominal Pain (RAP)

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BACKGROUND

Recurrent abdominal pain (RAP) was described as a symptom complex by a British paediatrician John Apley and he defined it as pain that waxes and wanes, occurring at least 3 times over a period longer than 3 months and severe enough to affect a child's activities.¹ Chronic abdominal pain is common among school children and young adolescents with prevalence ranging from 0.5 to 19 %.²⁻⁵ The American Academy of Paediatrics (AAP)

Subcommittee on chronic abdominal pain 2005 defined CAP as long-lasting intermittent or constant abdominal pain as three or more lymph nodes that are each 5 mm or greater in the short axis or 10 mm or greater in the long axis. Primary mesenteric lymphadenitis is considered when enlarged mesenteric lymph nodes are noted in the absence of other abnormalities. Mesenteric lymphnode enlargement has been associated with the infection of the GI or upper respiratory tract by large number of the viral bacterial, mycobacterial and parasitic organisms. In children, mesenteric adenitis may be seen often may be of viral in origin and it is the most frequently encountered entity responsible for a large percentage of the cases of 'medical bellyache' seen in clinical practice. It's observed that same etiological agent which causes swelling of the lymphoid tissue of Peyer's patches can act as etiological factor for mesenteric adenitis induced intussusception in children. Mesenteric lymphadenitis is found to be one of the commonest finding associated with children with chronic abdominal pain, but its significance is rarely mentioned in the literature.

Mortality and complications due to mesenteric adenitis has not been noted. Ultrasonography is the best tool to rapidly differentiate the disease from acute appendicitis and if diagnose accurately surgical intervention can be avoided as majority of cases resolve with conservative treatment. Mesenteric adenitis in Indian children is a clinical syndrome, frequently found in a relatively young age group, which improves spontaneously unless specific anti-microbial agents are indicated by microbiological tests, such as tuberculosis or typhoid fever. This is a benign, self-limiting condition that does not require medical or surgical intervention but follow up is necessary in these patients. Enlarged mesenteric lymph nodes are also associated with a variety of pathological conditions such as Crohn's disease, appendicitis, gastroenteritis, yersinia, cat scratch disease and AIDS. The prevalence and significance of such enlarged MLN has rarely been assessed.⁶

In children conditions such as adnexal torsion, rotavirus enteritis, neutropenic colitis, leukemia, pelvic inflammatory disease and staphylococcal pneumonias are other causes of mesenteric adenitis. We need to have a high index of suspicion for tubercular lymphadenitis in some of these patients as India is an endemic for tuberculosis. A clinician should not solely depend on the results of ultrasonography the possibility of misdiagnosis should be kept in mind in patients with abdominal colic. Mesenteric adenitis and post-viral gastritis often have a very definite beginning after an

acute viral infection. There usually is minor peri-umbilical or hypo-gastric tenderness upon abdominal examination.

The present study was undertaken to assess the prevalence and significance of mesenteric lymphadenopathy among children with chronic abdominal pain and compare them with those among children with no complaints of abdominal pain.

METHODS

This is a retrospective and a single center case control study conducted in the Paediatric department of a Private medical college in Puducherry from the records over past 24 months. Cases were defined as 5 - 15 years aged children presenting with chronic abdominal pain. Controls were defined as 5 - 15 years aged children who were subjected to abdominal ultrasonography for reasons other than abdominal pain.

Records over past 24 months were studied and around 110 case records with complaints of chronic pain abdomen subjected to abdomen ultrasonography were identified, whereas there were around 102 case records subjected to abdomen ultrasonography for other reasons. For uniformity of analysis, a total of 100 children aged 5 - 15 years, presenting with chronic abdominal pain [CAP], who were subjected to abdominal ultrasonography, were included as cases and a total of 100 Children who were subjected to abdominal sonography for reasons other than abdominal pain were included in the control group. Children with known organic causes for chronic abdominal pain (pancreatitis, dysmenorrhea, abdominal TB, renal calculi etc.) were excluded from cases in this study. Children with known cause for MLN e.g. gastroenteritis, malignancy, abdominal tuberculosis, rheumatic disorders etc. were excluded from cases as well as from controls in this study. The study protocol was approved by the Institutional Ethics Committee. Patient's demographic profile, clinical features and ultrasonography of abdomen were recorded. Data pertaining to history, physical examination and abdominal ultrasonography was recorded in a proforma designed for the study.

Details regarding all lymph nodes and measurements in transverse and antero-posterior dimensions were entered in the proform. A size of more than 5 mm in the short axis or more than 10 mm in the long axis was considered significant.

Statistical Analysis

The study data was processed using the Statistical Package for the Social Sciences (SPSS) V21.0. Descriptive statistics were used for the analysis of baseline characteristics of study group. For the variables following normal distribution curve, mean and standard deviation were computed. Pearson's chi-square test was used in the analysis. A P value of < 0.05 was considered statistically significant.

RESULTS

Of the 100 controls, 40 had congenital anomalies and genetic syndromes where abdominal sonography was done to rule out renal/gastrointestinal malformations, 21 had renal disorders, 18 had hepatic disorders, 21 had pyrexia of unknown origin. Chronic abdominal pain was almost equal in both sexes with a male: female ratio of 0.9 : 1 among cases. In the present study, CAP was more prevalent among the younger age group [66 % of children with CAP were of 5 - 10 years] as in Table 1 among the cases.

Variable	Cases (N = 100)	Among Cases Significant MLN [N = 89]	Controls (N = 100)
Sex			
Male	48(48 %)	39 [81.2 %]	57(57 %)
Female	52(52 %)	50 [96.1 %]	43(43 %)
Age			
5-10 years	66(66 %)	62 [93.9 %]	60(60 %)
11-15 years	34(34 %)	27 [79.4 %]	40(40 %)

Table 1. Baseline Demographic Characteristics of the Study Group

Age Group	Male	Female	Total
5-10 years	26 [66.7 %]	36 [72 %]	62 [69.7 %]
11-15 years	13 [33.3 %]	14 [28 %]	27 [30.3 %]
Total	39[100 %]	50 [100 %]	89 [100 %]

Table 2. Baseline Demographic Characteristics of Children with Significant Mesenteric Lymphadenopathy among Cases

The prevalence of significant MLN among children with chronic abdominal pain was 89 % in our present study. Of which, 39 [43.8 %] were boys and remaining 50 [56.2 %] were girls which accounts to male female ratio of 0.7 : 1. Around 70 % of the children with significant MLN were of the younger age group as in table no. 2.

Among the cases group, the most common clinical finding encountered is vomiting, followed by pallor and abdominal tenderness. Significant MLN is found to be frequently associated with abdominal pain and tenderness and vomiting as in Table.no. 3

Variable	Number [N = 100]	Significant MLN [N = 89]
Vomiting	30	28 [93.3 %]
Constipation	7	3 [42.8 %]
Fever	15	8 [53.3 %]
Pallor	28	22 [78.5 %]
Abdominal tenderness	28	28 [100 %]
Hepatomegaly	5	0 [0]

Table 3. Symptoms and Signs in Children with Chronic Abdominal Pain and MLN

In the present study, the ultrasound findings of children with chronic abdominal pain are tabulated as in table.no.4. The commonest finding on ultrasound seen in children with chronic abdominal pain is Mesenteric lymphadenopathy [89 %] as in table. no.4.

Ultrasound Findings	Chronic Abdominal Pain [n =100]
Mesenteric lymphadenopathy	89 [89 %]
GB calculus	1 [1 %]
Left hydronephrosis	1 [1 %]
Transient intussusception in ileocaecal junction	1 [1 %]
Hepatomegaly	5 [5 %]
No significant abnormality	3 [3 %]

Table 4. Ultrasound Findings in Children with Chronic Abdominal Pain

In our study, the incidence of Significant MLN among children with chronic abdominal pain was 89 % [N = 89,

out of 100 cases] and was 26 % among controls as in table. No. 5. It is evident that the association of significant MLN among children with chronic abdominal pain was found to be statistically significant, with P value of 0.01 as in table.no.5.

Significant Mesenteric Lymphnode	Case (N = 100) Number %	Control (N = 100) Number %	P Value*
Present (N = 115)	89 (89 %)	26(26 %)	0.01
Absent (N = 85)	11 (11 %)	74 (74 %)	[significant]

Table 5. Division of Study Group with Reference to Mesenteric Lymph Nodes in Abdominal Ultrasonography

DISCUSSION

In our study, chronic abdominal pain was prevalent equally among both the sexes with a male: female ratio of 0.9 : 1 with a majority of them belonging to the younger age group [66 % of children with CAP were of 5-10 years].

In a study done by Vaisakh Sambasivan et al. on mesenteric lymphadenopathy in children with chronic abdominal pain in Sri Lanka, the prevalence of chronic abdominal pain was more frequent among the age group of 5 - 10 years with both boys and girls being equally affected.⁷

Mesenteric adenitis is usually viral in origin and has self-limiting course. The clinical manifestation of this disease is right lower quadrant pain with fever. It can mimic appendicitis in children and affects the mesenteric lymph nodes in the right iliac region. X-ray abdomen erect view and ultrasonography with graded compression is the main diagnostic modality to diagnose abdominal pain in children. Brennemann was the first to report mesenteric adenitis and it was also known as Brennemann syndrome.⁸ The disease is primarily associated with acute appendicitis, intussusception, and lymphoma.⁸ The prevalence of significant MLN among children with chronic abdominal pain was 89 % in our present study. Of which, 39 [43.8 %] were boys and remaining 50 [56.2 %] were girls which accounts to male female ratio of 0.7 : 1. Around 70 % of the children with significant MLN were of the younger age group. In a similar study done by Vayner et al. the prevalence of mesenteric lymphadenopathy was to be 61.4 % among those with recurrent abdominal pain with around 45 % boys and 45.6 % of 5 - 8 years of age.

On one-year follow-up of the 116 children with RAP and mesenteric lymphadenopathy, no overt disease had developed. Repeat USG study was done on 30 children, who had mesenteric lymphadenopathy out of which in 8 patients the findings had disappeared and the abdominal pain also resolved. In the other 22 patients, there was still mesenteric lymphadenopathy. The morphology of the lymph nodes did not change in these children, but some lymph nodes had become smaller.

The abdominal pain had resolved in 10 of the 22 patients, and had become less bothersome in the other 12 patients.⁹ In the present study, children with significant MLN presented more frequently with chronic abdominal pain and vomiting. The most common finding on ultrasound

seen in children with chronic abdominal pain is noted to be mesenteric lymphadenopathy [89 %].

Similar results had been noted in a study by Vaisakh Sambasivan et al.¹⁰ Similar to our study, a few studies have reported right lower quadrant of abdomen as the common site of location of MLN followed by the periumbilical region. In a review of study from Islamabad 22 % incidence of mesenteric lymphadenitis was seen in patients presenting with abdominal tuberculosis.¹¹

The gastrointestinal tract, peritoneum, lymph nodes and solid viscera may be involved in Abdominal tuberculosis. However, the most common sites were peritoneum and abdominal lymph nodes. In our study, the incidence of significant MLN among children with chronic abdominal pain was 89 % and greater than seen among controls. Further it is evident that the association of significant MLN among children with chronic abdominal pain was found to be statistically significant. Similar results were observed by few researchers.^{11,12} When MLN is the only finding in abdominal ultrasonography, parents can be reassured regarding the benign nature of this finding and possible good prognosis.

CONCLUSIONS

MLN is one of the most common findings in children with CAP with a prevalence of 89 %. In our study, significant MLN. i.e. lymph nodes > 5 mm in short axis and >10 mm in long axis was significantly associated with children with chronic abdominal pain as compared to children in control group.

Abdominal ultrasonography is a useful tool in the evaluation of CAP to rule out organic causes. When MLN is the only finding in abdominal ultrasonography, parents can be reassured regarding the benign self-limiting nature of this finding and possible good prognosis. In mesenteric adenitis, stools may have scant amounts of blood, but the child will appear well between attacks of pain and does not lose weight. An abdominal ultrasound may show large numbers of enlarged lymph nodes in the mesentery, but a negative ultrasound does not exclude this diagnosis.

Comprehensive laboratory investigations targeted to explore the aetiology of MLN could not be performed in this study. Long-term follow-up of these patients was not performed in our study, which would have been useful to evaluate the natural history of MLN. These are the limitations of this study.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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