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Clinical Profile and Management of Mesenteric Lymphadenitis in Children

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Abstract
Aim: of this study was to evaluate the etiology, clinical characteristic and management of enlarged mesenteric nodes in pediatric patients presenting with abdominal pain.
Material and Method: The study was done in 100 patients attending paediatric and paediatric surgery OPD and emergency in KVG Medical College and hospital Sullia, from August 2018 to June 2020 presenting with abdominal pain of various causes. Abdomen ultrasonography was done and findings were recorded. The patients were treated and follow up done.
Result: The peak incidence was seen between 5 years to 8 years, and thereafter there was a decrease in incidence with increase in age especially after the age of 11 years. Clinically right lower quadrant tenderness was seen in all cases but rebound tenderness was observed in only 25 cases. Diarrhea (80), fever (75), nausea and vomiting (25) patients were the presenting features. A review of the dimensions of the lymph nodes detected shows that the transverse diameter of the lymph nodes was greater than the antero-posterior diameter. Our study also showed that the 80% of the lymph nodes were seen in the right lower quadrant followed by 12% in the left lower quadrant and 8% in the peri-umblical region. Most of the patients (96%) improved spontaneously without using antibiotics.
Conclusion: In Indian children mesenteric adenitis is a clinical syndrome with self-limiting course and in most case it resolves spontaneously. 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.

Keywords: Mesenteric lymphadenitis, Lymph nodes, abdomen ultrasonography

Introduction
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. The size of lymph node more than 5 mm radiologically is described as mesenteric lymphadenitis. Most of the patients improve spontaneously without using antibiotics. The retrospective study was done to evaluate the etiology, clinical characteristic and management of enlarged mesenteric nodes in pediatric patients presenting with abdominal pain.

Material and Method
After approval from ethical committee 100 patients within age range from 1 to 16 years attending paediatric and paediatric surgery OPD and emergency department in our hospital Bhopal from March 2012 to March 2015 presenting with abdominal pain of various etiological causes subjected to ultrasonographic examination were included in this study. Patient's demographic profile, clinical features and ultrasonography of abdomen were evaluated. Final diagnosis was established and patients were followed in OPD.
All lymph nodes were evaluated and measured in transverse and anterio-posterior dimensions. Lymph nodes of size >5mm were documented. Other relevant findings such as free fluid and positive probe tenderness were also recorded.

Observations

Table 1: Distribution of cases according to age and sex (n=100)

Age in years	N	%	male	female
1-4	13	13	8	5
5-8	60	60	35	25
9-12	21	21	10	11
13-16	6	6	4	2

The peak incidence in patients was seen between 5 years to 8 years, and thereafter there was a decrease in incidence with increase in age especially after the age of 11 years.

Table 2: Initial symptoms and sign of mesenteric adenitis (n=100)

Clinical symptoms and signs n	N
Tenderness	100
Diarrhea	80
Fever	75
Nausea/Vomiting	25
Rebound tenderness	25

Clinically right lower quadrant tenderness was seen in all cases but rebound tenderness was observed in only 25 cases. Diarrhea (80), fever (75), nausea and vomiting (25) patients were also seen.

Table 3: Location and distribution of lymph nodes based on ultra sonography (n=100)

Location	N	Percentage (%)
Right lower quadrant	80	80%
Left lower quadrant	12	12%
Paraumblical	8	8%

The largest proportion of the nodes was seen in the right quadrant, followed by left lower quadrant. A review of the dimensions of the lymph nodes detected shows that the transverse diameter was by and large always greater than the antero-posterior diameter The maximum transverse diameter values were seen between 10- 14 mm whereas antero-posterior diameter value was seen between 4-8 mm. Probe tenderness was seen was 3 % of the patient sample. Inter-loop fluid was seen in 4% of patient sample.

Table 4: Management of mesenteric adenitis (n=100)

Location	N	Percentage (%)
No antibiotics-Conservative	80	80%
Anti-tubercular treatment	12	12%
Ciprofloxacin for treatment	8	8%

Discussion

In western world Yersinia enterocolitica is the main causative organism for mesenteric adenitis [1]. In 1921 Mesenteric adenitis was first reported by Brennemann, also known as Brennemann syndrome. The disease is primarily associated with acute appendicitis, intussusception and lymphoma [2]. In the first decade of life mesenteric adenitis is more common than appendicitis in view of proliferative response of bodily lymphoid tissue. After second decade the condition is relatively uncommon. In children, simple or nonspecific mesenteric adenitis often viral in origin is the most frequently encountered entity responsible for a large percentage of the cases of 'medical bellyache' seen in routine practice. It's observed that same etiological agent which causes swelling of the lymphoid tissue of Peyers patches can act as etiological factor for mesenteric adenitis induced intussusception in children. Mesenteric nodes can be enlarged because of adenoviral infections, Crohns disease, appendicitis, gastroenteritis; Yersinia infections, AIDS, or it can be due to incidental finding in asymptomatic children [1]. It is not possible to draw any conclusion of statistical significance, since the diagnosis cannot be confirmed unless the glands are actually palpable or seen at operation. Clinically the various clinical features suggestive of non-specific mesenteric adenitis are clean tongue, deep tenderness in right iliac fossa radiating towards the umbilicus, the absence of rigidity and palpable glands. The latter two are the most important signs and indeed it is the absence of rigidity which makes it possible to palpate deeply situated glands. Patients with mesenteric adenitis can have diarrhea (50% to 100%), nausea, vomiting suggestive of terminal ileitis as seen in our study. Rebound tenderness is seen more frequently in western countries but is seen in only 25% cases in our study. Infectious ileocecitis is common problem in paediatric surgery because it mimics acute abdomen. The sonographic hallmark of infectious ileocecitis is symmetrical mural thickening of terminal ileum and caecum [3]. In 1926 Wilensky and Hahn classified mesenteric lymphadenitis into three types; simple, suppurative and tuberculous [4]. Ultrasound evaluation using graded compression is reported to be confident tool in the diagnosis of acute appendicitis or enlarged mesenteric lymph node [5]. It's not always necessary to perform CT scan or barium study because ultrasonography is sufficient to make the diagnosis (only 9.51% false positive results). The ESR is higher in infectious ileocecitis than in acute appendicitis. In our study the error of treating acute appendicitis conservatively in the belief that the condition was one of mesenteric adenitis did not occur. In those cases where the differentiation could not be made, and with strong clinical suspicion of acute appendicitis, it's better to operate and see as complicated and ruptured appendix in children can be lethal. In children conditions such as adenexal torsion, Rotavirus enteritis, neutropenic colitis, leukemia, pelvic inflammatory disease and staphylococcal pneumonias are other causes of mesenteric adenitis. India is an endemic area of tuberculosis so we should suspect tubercular lymphadenitis in some of these patients. 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. Usually, with these two illnesses, the pain is by far the most prominent feature accompanied by some loss of appetite or even mild nausea. 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. As per the study by Sivit CJ, Newman KD, Chandra RS mesenteric lymph nodes were detected in 14% of symptomatic children, but enlarged mesenteric lymph nodes in children with acute pain represents a non-specific finding [6]. Zouzhuan Lin reported that high frequency ultrasound can show enlarged lymph nodes clearly and clinical diagnosis can be made accurately with it [7]. In few cases evaluation of terminal ileum with colonoscopy is important as abnormalities in distal colon can be found. In our study most of the patients except those requiring anti-tubercular agents and ciprofloxacin for typhoid fever needed no antibiotics. In recent years however, the advances in quality of sonographic images have improved the diagnostic accuracy in acute abdominal pain [8]. In this disease the attacks are commonly recurrent, separated by periods of freedom from discomfort, but persistent ill health and frequently recurring fever and pain, with constant abdominal discomfort have been found to be due to tuberculosis which should be kept as differential diagnosis [9]. Our findings correlated with the study published by Vayner, Coret, et al regarding size, number, and location of mesenteric nodes. In their study, the location of the nodes was in the right lower quadrant with a greater prevalence in boys [10, 11]. In a review of study from Islamabad 22% incidence of mesenteric lymphadenitis was seen in patients presenting with abdominal tuberculosis [12]. In our study 2 patients were identified and treated for tuberculosis based on clinical, radiological findings. Abdominal tuberculosis may involve the gastrointestinal tract, peritoneum, lymph nodes or solid viscera; however, peritoneum and abdominal lymph nodes are the most common sites [13, 14]. Most of the patients in our study improved spontaneously without using any antibiotics.

Conclusion

Mesenteric lymphadenitis is a common medical cause of abdominal pain in pediatric patients. It is a common self-limiting inflammatory process frequently caused by viral pathogen, affecting mesenteric lymph nodes in the abdomen. Mesenteric adenitis has never been proved to be responsible for any mortality nor have any complications been attributed to it. 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.

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