

Clinico-Radiological Profile of Mesenteric Lymphadenitis in Children in a Tertiary care Institute of Central India

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Abstract

Background: Mesenteric adenitis is self-limiting inflammatory process mimicking appendicitis and affects the mesenteric lymph nodes in the right lower quadrant. Ultrasonography with graded compression is the main modality to diagnose this entity. **Aim:** of this study was to evaluate and analyse the incidence of enlarged mesenteric nodes with ultrasound in pediatric patients referred for abdominal pain. **Material and Method:** A total 100 patients attending paediatric and paediatric surgery clinic in Chirayu Medical College and hospital Bhopal, from May 2011 to May 2014 presenting with abdominal pain of various causes were included in this study. The presence of enlarged nodes, their location, size and other ultrasonographic findings were recorded. Final diagnosis was established after patient management and follow up. **Result:** On the basis of this study, it was observed that the incidence of enlarged lymph nodes increases with age with the peak incidence is at around 7 years range (5-8) years and decrease thereafter. A review of the dimensions of the lymph nodes detected shows that the transverse diameter of the lymph nodes was by and large always greater than the antero-posterior diameter. The maximum transverse diameter values was seen between 10- 14 mm whereas antero- posterior diameter values was seen between 4-8 mm. 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-aortic region. **Conclusion:** The possible variation in the clinical presentation of abdominal pain due to mesenteric lymphadenitis is a challenging task for physicians to diagnose. Mesenteric lymphadenitis is found to be self limiting entity, usually viral in origin. Hence surgical intervention can be avoided if diagnosis is accurately made.

Keywords: Mesenteric Lymphadenitis, Lymph Nodes, Ultrasonography.

Introduction

Mesenteric lymphadenitis is a self-limiting inflammatory process frequently caused by viral pathogen mainly adenovirus. Epstein-Barr virus and Parvovirus B19 are also implicated as the causative organism affecting mesenteric lymph nodes in the abdomen [1][2]. Many causes of abdominal pain in children are seen in clinical practise like gastroenteritis, appendicitis, mesenteric adenitis, constipation, meckels diverticulum, lactose intolerance, inflammatory bowel disease, hepatitis, parasitic infection, gastritis, urological and gynecological diseases. The incidence of mesenteric adenitis in patients with and those without abdominal pain is low. It is the main differential diagnosis of acute appendicitis and any other surgical pathology usually in

right lower quadrant of abdomen. The characteristic pain in mesenteric adenitis is recurrent, but they are separated by periods of a few months freedom from discomfort. Ultra sonography of the abdomen is routinely done to investigate the cause of pain. Radiologically the term mesenteric lymphadenitis is used to describe lymph nodes > 5 mm. This retrospective study was done with the aim to evaluate and analyse the incidence of enlarged mesenteric nodes with ultrasound in pediatric patients referred for abdominal pain.

Material and Method

A total of 100 patients within age range from 1 to 16 years attending paediatric and paediatric surgery clinic in Chirayu Medical College and hospital Bhopal from May 2011 to May 2014 presenting with abdominal pain of

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various causes and subjected to ultrasonographic examination were included in this study. Patients demographic profile, diagnosis, size, site, number of lymph node were evaluated. . Final diagnosis was established after patient management and follow up. Three experienced consultant radiologists from the department of radiology performed all the ultrasonographic examinations. Scanning was performed using Philips HDU 3 and Philips HDU 7 machines. The transducers used were curvilinear 3.75

MHz and Linear 7.5MHz probes.All lymph nodes were evaluated and measured in transverse and antero-posterior dimensions. Presence of three or more lymph nodes was considered as a cluster of lymph nodes .Lymph nodes of size >5mm were documented .Other relevant findings such as free fluid and positive probe tenderness were also recorded.The final diagnosis was established by surgical and histological evaluation ,follow up of these patients was done after 15 days.

Results

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	12	23
13-16	6	6	5	1

The peak incidence was seen between 5 years to 8 years, and thereafter there was a decrease in incidents with increase in age especially after the age of 12 years.

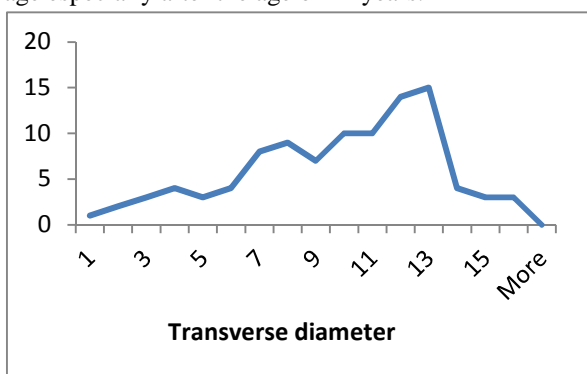


Figure: 1

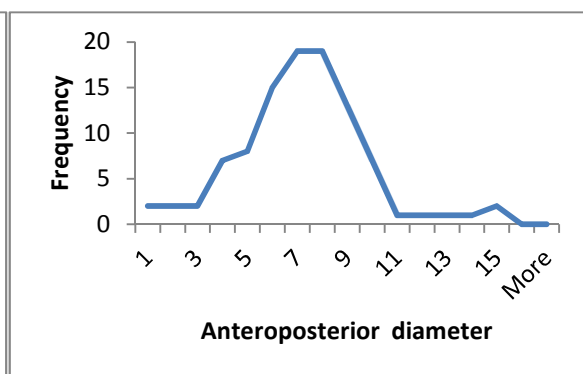


Figure: 2

A review of the dimensions of the lymph nodes detected shows that the transverse diameter (Figure 1) was by and large always greater than the antero-posterior diameter (Figure 2). The maximum transverse diameter values were seen between 10- 14 mm whereas antero-posterior diameter value was seen between 4-8 mm. An observation was that 50% of the lymph nodes had transverse diameter about 2 times that of the antero-posterior diameter.

Probe tenderness was seen was 3 % of the patient sample. Inter-loop fluid was seen in 4% of patient sample.

Table 2: Location and distribution of lymph nodes (n=100)

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

Location and Lymph nodes and Distribution: The largest proportion of the nodes was seen in the right quadrant, followed by the para-umbilical region and the left lower quadrant.



Fig 1: Multiple lymph node visible in right and left lower quadrant

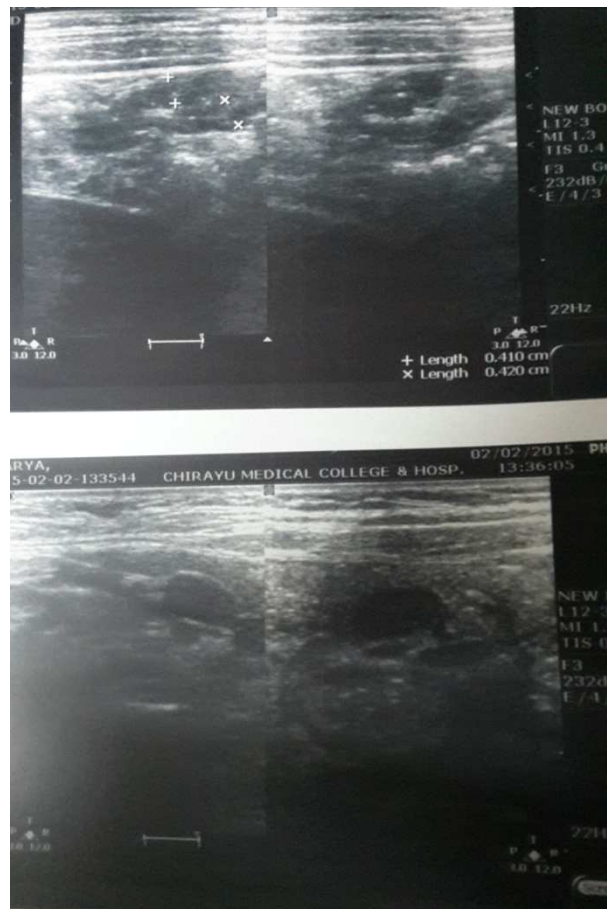


Fig 2: Transverse sonogram of the right lower quadrant

Discussion

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 and often diagnosed as acute appendicitis, the correct diagnosis only being made by diagnostic laparoscopy or open laparotomy. In the first decade of life mesenteric adenitis is more common than acute appendicitis-not a surprising finding in view of the well known proliferative response of the bodily lymphoid tissue in this period of life. Mesenteric nodes can be enlarged because of adenoviral infections, Crohns disease, appendicitis, gastroenteritis, Yersinia infections, AIDS. It can be due to incidental finding in asymptomatic children [3]. 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[4]. In 1926 Wilensky and Hahn classified mesenteric lymphadenitis into three types; simple, suppurative and tuberculous [5]. Ultrasound evaluation

using graded compression is reported to be a confident tool in the diagnosis of acute appendicitis or enlarged mesenteric lymph node [6]. The use of ultrasound scanning with graded compression in recent years has made the preoperative differential diagnosis of acute appendicitis from mesenteric adenitis possible. Lymph nodes are also non-compressible, but elliptical or circular in shape. They often appear hypoechoic but have consistent and symmetric echotexture throughout the structure (in contrast to an abscess). The most important and characteristic sonographic finding in patients with early abdominal tuberculosis is the combination of mesenteric thickening of 15 mm or more with associated mesenteric lymphadenopathy with multiple conglomerated nodes. Dilated fluid filled loops of small intestine with hyperperistalsis are often seen around the abnormal mesentery other sonographic findings like ascites, matted fixed small bowel loops, omental inflammation and terminal ileal wall thickening support the diagnosis of tuberculosis. In the radiology literature, lymph nodes measured in their short-axis of greater than

5 mm is the criteria for the sonographic diagnosis of mesenteric adenitis. In a recent report 8.2% of patients (14/70) who underwent ultrasonographic examination for clinical suspicion of acute appendicitis were diagnosed with mesenteric adenitis. There is disagreement in the radiological literature about the frequency of occurrence in the mesenteric lymph nodes. 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[7]. McGahan JP reported that high frequency ultrasound can show enlarged lymph nodes clearly and clinical diagnosis can be made accurately with it. In recent years however 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]. The abnormalities of the ileum are most prominent in Yersinia ileocectitis, whereas wall thickening of caecum and ascending colon is more prominent in Salmonella and Campylobacter ileocectitis. As several studies have shown terminal ileitis in addition to ultrasonographic evidence of enlarged lymph node so there is a need of evaluation of terminal ileum in patients with mesenteric adenitis [10]. Our findings correlated with the study published by Vayner, Coret, et al in Pediatric Radiology December Edition 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 [11][12]. One study by (Simanovsky, 2007) suggested that lymph nodes with measurements greater than 10 mm should be diagnostic for mesenteric adenitis since they found many asymptomatic children with lymph nodes measuring 5 mm.[13]

Conclusion

Mesenteric lymphadenitis 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. It is a common medical cause of abdominal pain in pediatric patients. In children who present with acute abdominal pain, surgical causes such as appendicitis are not visualized

on sonography, and US findings consist of enlarged mesenteric lymph nodes 10mm in their long axis may need pain control or fluid hydration during the acute process. But ultimately, this is a benign, self-limiting condition that does not require medical or surgical intervention and repeat ultrasonography is needed for follow up.

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