ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 12 | December - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY ON CLINICAL PROFILE AND RISK FACTORS FOR REOCCURRENCE OF PAIN ABDOMEN IN CHILDREN WITH MESENTERIC LYMPHADENOPATHY.

Paediatrics

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ABSTRACT

Introduction: Mesenteric lymphadenopathy (ML) is a self-limiting inflammatory condition affecting the mesenteric lymph nodes. Abdominal ultrasonography is the mainstay of diagnosis. The presentation of ML may clinically mimic acute appendicitis, intussusception, constipation, inflammatory bowel disease, Meckel's diverticulum, ovarian torsion, basal pneumonia, Henoch-Schönlein syndrome, and urinary tract infection. Many physicians currently consider ML a non-disease and its symptoms unexplained also reoccurrences are frequent even after management. Hence the study aims to determine the clinical patterns and reoccurrence patterns after medical management of mesenteric lymphadenopathy in paediatric patients. **Material and methods:** A descriptive analytical study was done in paediatric patients, attending tertiary care hospital, during April 2019 to September 2019. Patients diagnosed with ML (101) on USG abdomen, were selected by purposive sampling. Sociodemographic details, clinical patterns and reoccurrence patterns after medical management were recorded. Association between risk factors and reoccurrence pattern was identified using chi-square test with $P<0.05$ as statistically significant. **Results:** Majority were males (61.4%) and belong to age group 5-10 years (56.4%). Reoccurrence was more in males (33.9%) compared to females (25.6%), age <10 years (37%), patients with pallor and with class III and IV socioeconomic status (39.6%) which was statistically significant. **Conclusions:** The ML was predominantly seen in males, more common in first decade of life and in lower socio-economic status. Reoccurrences were more in patients with pallor, and less in patients treated with antihelminthics and pantaprazole.

KEYWORDS

Mesenteric lymphadenopathy, paediatric, clinical pattern, reoccurrences

INTRODUCTION

It can be caused by a variety of conditions rang- ing from mild and self-limiting to life-threatening diseases. An early and accurate diagnosis results in more appropriate management and, subsequently, leads to better outcomes and lower risk of morbidity. Causes for acute AP can be classified as urgent or nonurgent. Urgent causes require immediate treatment (within 24 hours or sooner if associated with ischemia) to prevent complications, whereas for nonurgent causes, immediate treatment is not necessary.

Mesenteric lymphadenopathy (ML) is a self-limiting inflammatory condition affecting the mesenteric lymph nodes.[1,2] It can be caused by a variety of conditions ranging from mild and self-limiting to life-threatening diseases. An early and accurate diagnosis results in more appropriate management and, subsequently, leads to better outcomes and lower risk of morbidity. Urgent causes require immediate treatment (within 24 hours or sooner if associated with ischemia) to prevent complications.[3]

ML can be divided into two groups: nonspecific (or primary) and secondary. Primary ML is a lymphadenopathy, mostly right-sided, without an identifiable acute inflammatory process. Secondary ML is associated with a detectable intra-abdominal inflammatory process.[4]

ML is caused by, bacteria (Bubonic plague, streptococcal disease) virus (Epstein Barr virus, Cytomegalovirus, Varicella zoster virus, Herpes simplex virus, upper respiratory tract Infections, HIV infection), parasites (Toxoplasmosis, Leishmaniasis, Malaria) fungal, neoplastic, metastatic, autoimmune, metabolic (Niemen-Pick disease and Gauche disease) drugs (Phenytoin, phenobarbital, carbamazepine, sulphonamides) and Idiopathic: It occurs as a consequence of a mechanism of some unknown cause.[5,6]

ML occurs in both genders and typically in children. Possible signs and symptoms of ML include Fever, vomiting, diarrhoea, pain abdomen. Complication includes severe volume depletion, electrolyte imbalance, abscess formation, peritonitis, sepsis, arthralgia, diverticulitis, crohn's disease, ulcerative colitis, erythema nodosum, which are rare.[7]

Abdominal ultrasonography is the mainstay of diagnosis. In subjects affected by acute mesenteric lymphadenopathy, ultrasonography discloses multiple, enlarged, hypoechoic mesenteric lymph nodes.[8] Mesenteric lymphadenopathy is defined radiologically with, ultrasound as often the investigation of choice. Features include:

enlarged lymph nodes

- Three or more (very) tender nodes with a short-axis diameter of at least 5 mm clustered in the right lower quadrant (see normal mesenteric lymph nodes) [9,10]
- enlarged lymph nodes are located anterior to the right psoas muscle in the majority of cases, or in the small bowel mesentery.[11]
- ileal or ileocaecal wall thickening may be present
- thicker than 3 mm over at least 5 cm of the bowel despite bowel lumen opacification (CT) and distension
- a normal appendix (if seen) [12]

The presentation of ML may clinically mimic acute appendicitis, intussusception, constipation, inflammatory bowel disease, Meckel's diverticulum, ovarian torsion, basal pneumonia, Henoch-Schönlein syndrome, and urinary tract infection.[13] Acute ML is almost invariably confused with acute appendicitis a common diagnostic mimic.[12] Initially, surgical management of ML with appendectomy was advised by some. Many physicians currently consider ML a non-disease and its symptoms unexplained also reoccurrences are frequent even after management.[13] Hence the study aims to determine the clinical patterns and reoccurrence patterns after medical management of mesenteric lymphadenopathy in paediatric patients.

Methodology:

A descriptive analytical study was done in paediatric patients, attending tertiary care hospital, in Telangana India, during April 2019 to September 2019.

Inclusion Criteria:

1. Children of age below 18 years.
2. Children visiting the hospital with abdominal pain.
3. Children with either parent's consent and or children's assent to participate in the study

Exclusion Criteria:

1. Children presented with significant mesenteric lymphadenopathy due to surgical causes.
2. Children admitted with abdominal pain but no significant mesenteric lymphadenopathy on USG abdomen.
3. Children joined in the hospital with the signs and symptoms other than mesenteric lymphadenopathy.

Patients were selected by purposive sampling method. Sample size was calculated using formula for finite population. Where, Z α is the standard normal deviate, 1.96 at 95% confidence interval.

As per study by Sabal, S.,et al ML was seen in 17.07% of all cases attending paediatric department.[14]

Hence P = Prevalence is 17.07 %. i.e P = 17.07, 100-P = (100-17.07) e = allowable error was 4% N = study population (paediatric patients with pain abdomen who attended paediatric OPD in the institution in the previous year during the April 2018 to September 2018) = 120,

$$Sample\ size(n) = \frac{\frac{z^2 X\ p(1-p)}{e^2}}{1 + \frac{z^2 X\ p(1-p)}{e^2 N}}$$

$$Sample\ size(n) = \frac{\frac{(1.96)^2 X\ 17.07(100-17.07)}{(0.04)^2}}{1 + \frac{(1.96)^2 X\ 17.07(100-17.07)}{(0.04)^2\ 120}}$$

$$Sample\ size(n) required\ is = 89$$

Corrected sample size (with non response rate and loss to follow up as 10%) was 99. Data was collected from 101 samples

Collection Of Data:

After obtaining institutional ethical committee clearance and parent's consent and or children's assent to participate in the study, data was collected using a semi structured questionnaire. Patients with complaints of abdominal pain will be completely evaluated; demographic, clinical, inflammatory, radiographic data were recorded in all patients. Patients identified with surgical causes and in need of emergency management on physical examination, were excluded from the study. Patients included underwent abdominal ultrasound, focusing on the identification of mesenteric lymphadenopathy and given medical management, with supportive treatment, analgesics, antibiotics and antacids. Telephonic follow-ups were done for 3 months to record reoccurrences of abdominal pain.

Statistical Analysis:

Data entered in MS-EXCEL 2007 with demographic and clinical characteristics represented as percentages. Statistical analysis was done using chi-square test for association between reoccurrence of abdominal pain and risk factors; with $P < 0.05$ was considered to be significant using SPSS statistical software, version 22.

RESULTS:

In the present study 101 patients with complaints of pain abdomen were included, with mean age of study population 12±4.05. Majority were males (61.4%). Majority of patients belong to 5 to 10 years (56.4%) age group followed by 11-15 years. As per BG Prasad classification 46(45.5%) patients belong to upper middle class II. (Shown in table 1)

Table 1: Distribution of study patients by age, gender and socioeconomic status

Gender	Frequency (n=101)	Percent
Female	39	38.6
Male	62	61.4
Age(years)	Frequency	Percent
Less than 5	16	15.8
5 to 10	57	56.4
11 to 15	22	21.8
More than 15	6	5.9
Socioeconomic status	Frequency	Percent
Upper Class I	15	14.8
Upper middle Class II	46	45.5
MiddleClass III	27	26.7
Lower Middle class IV	13	12.9

Vomittings, cough/cold, burning micturition and fever were presenting symptoms in 54(53.5%), 31(30.7%), 3 (3%) and 22(21.8%) patients respectively. Other complaints included constipation, loose stools, loss of appetite and nausea (shown in figure1).

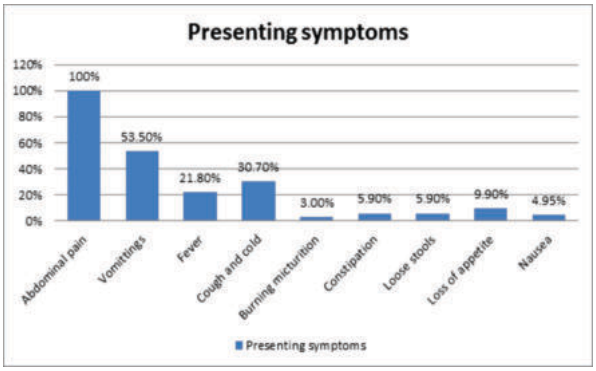

Figure 1: Distribution of patients by presenting symptoms

On examination pallor was seen in 29(28.7%) patients. Abdominal tenderness was seen in all the children with 75(74.3%) having localized and 26(25.7%) having diffuse pain abdomen. CRP and leucocyte count was raised in 64(634%) and 78(77.2%) patients respectively. Short axis diameter of lymph node by USG Abdomen showed 5-10mm, 11-15mm and 16-20mm in 46(45.5%), 23(22.8%) and 6(5.9%) patients respectively. (shown in table 2)

Table 2: Distribution of patients by clinical signs

Clinical signs		Frequency	Percent
Pallor	Present	29	28.7
Abdominal Tenderness	Localized	75	74.3
	Diffused	26	25.7
CRP	Raised	64	63.4
Leucocyte count	Raised	78	77.2
Erect Abdominal X-ray	Gas fluid level present	24	23.8
Short axis diameter of lymph node by USG Abdomen	5 to 10 mm	46	45.5
	11 to 15 mm	23	22.8
	More than 15 mm	6	5.9
	Multiple nodes	26	25.7

Patients were medically managed with antibiotics (metronidazole given to all the patients), antihelminths (albendazole given to 27/26.7% patients) pantoprazole (given to 62 patients) and ranitidine (given to 39 patients). Reoccurrence was seen in 31(30.8%) patients after medical management in 3 month follow-up interval. (shown in figure2)

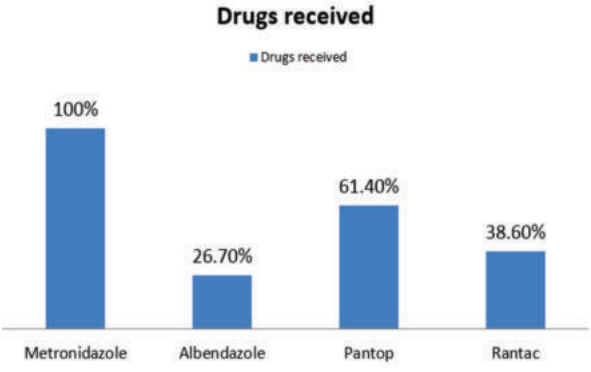

Figure 2: Distribution of patients by medical management received

Out of 101 patients 31 patients had reoccurrence.

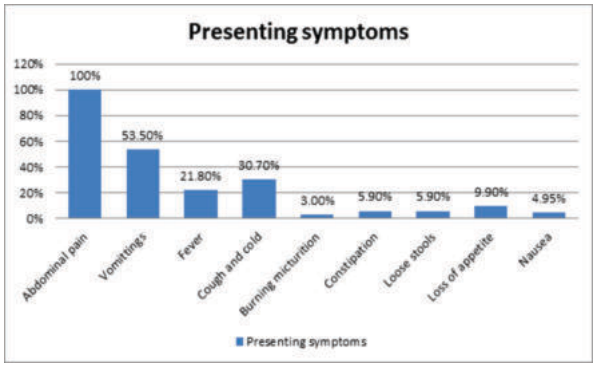

Figure 3: Distribution by reoccurrence pattern of mesenteric lymphadenopathy

Reoccurrence was more in males (33.9%) compared to females(25.6%). Reoccurrence more in age <10 years(37%) compared with age >10 years(14.3%), patients with pallor (48.3%) when compared to patients with-out pallor (23.6%)and with class III and IV socioeconomic status (39.6%) compared to class I and class II socioeconomic status (14.7%) which was statistically significant. Though reoccurrence was more common in patients with ARI(38.7%) it was not significant statistically. (shown in table 3)

Table -3 Socio-demography and Clinical pattern of study subjects versus reoccurrence pattern

Risk factors	Reoccurrence present (31)	Reoccurrence absent (70)	chi-square statistic/ P value
Gender			
Female (39)	10 (25.6%)	29 (75.4%)	0.7623/0.382618.
Male (62)	21 (33.9%)	41(66.1%)	
Age			
< 10 years (73)	27 (37%)	46 (63%)	4.9025/0.026818.
> 10 years (28)	4 (14.3%)	24(85.7%)	
Socio-economic status			
Class I and II (61)	9 (14.7%)	52(85.3%)	18.3948/0.000018
Class III and IV (40)	22 (55%)	18 (45%)	
Comorbidities			
ARI (31)	12 (38.7%)	19 (61.3%)	1.564/ 0.815256.
Acute GE (6)	2(33.3%)	4 (66.7%)	
UTI (7)	2 (28.6%)	5(31.4%)	
Gastritis (21)	6 (28.6%)	15 (71.4%)	
None detected (36)	9 (25%)	27 (75%)	
Pallor			
Present (29)	14 (48.3%)	15(51.7%)	5.9122/ 0.015037.
Absent (72)	17 (23.6%)	55(77.4%)	

Table 4: Reoccurrence Pattern Versus Medical Management

Medical management	Reoccurrence present (31)	Reoccurrence absent (70)	chi-square statistic/ P value
Albendazole given (27)	3(10%)	24(90%)	5.4458/ 0.019616
Not given (74)	28(37.8%)	46(62.2%)	
Pantoprazole given (62)	10(16.1%)	52(83.9%)	16.0101/0.000063
Pantoprazole Not given (39)	21(53.8%)	18(46.2%)	
Ranitidine not given (62)	14(22.6%)	48(77.4%)	3.3976/.065291
Ranitidine given (39)	16(41%)	22(59%)	

Reoccurrence was significantly less in patients given albendazole and pantoprazole.(shown in table 4)

DISCUSSION:

Mesenteric lymphadenopathy though self limiting is associated with reoccurrences especially in paediatric age group giving loss of school days out of sickness. In the current study 101 paediatric patients were included. Majority were males (61.4%) and belong to age group 5-10 years(56.4%) which was found similar to study by Chanchalni R et,al. where the peak incidence in patients was seen between 5 years to 8 years with majority being males (60%).[8] where as in study by Benetti C et al, majority were females with median age 8.2 years.[15] In the current study majority of patients belong to class III and IV socioeconomic status.

Vomittings (53.5%), cough and cold(30.7%) followed by fever(21.8%) was the most common complaints in the present study. In study by Chanchalni R et, al Diarrhea (80), fever(75),nausea and vomiting (25) were seen.

In the current study, ARI (30.7%), gastritis(21), UTI(7) and acute GE(6) were the other coexisting comorbidites. In study by Maheshwari K et al, commonest cause of mesenteric lymphadenopathy is respiratory tract infection seen in 36.8% of cases, followed by diarrhea in 28% of cases, urinary tract infections in 12.2%, worm infestations in 10.5%, followed by enteric fever and gastritis.[16]

In the current study on clinical examination abdominal tenderness, raised leucocyte count and pallor was seen in 100%, 77.2% and 27.8% of patients. In study by Bala Krishnan .S et,al anaemia was seen in 22.7% leucocytosis in 22.9%, elevated erythrocyte sedimentation rate in 14.4% and abdominal tenderness in only 16.7%.[17]

In this study reoccurrence was seen in 30.8% of patients after medical management. The Reoccurrence was more in males (33.9%) compared to females (25.6%), age <10 years (37%), patients with pallor and with class III and IV socioeconomic status (39.6%) which was statistically significant. In the first decade of life mesenteric adenitis is more common in view of proliferative response of bodily lymphoid tissue. After second decade the condition is relatively uncommon,[8] as the infections were more prone, in patients with lower socio-economic status. Reoccurrence was significantly less in patients given albendazole and pantoprazole in the current study.

CONCLUSIONS:

The ML was predominantly seen in males, more common in first decade of life and in lower socio-economic status. Reoccurrences were more in patients with pallor, and less in patients treated with antihelminthics and pantaprazole.

Limitations: single centered study with limited sample size.

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