Int.J.Curr.Microbiol.App.Sci (2025) *14*(09): 137-141

International Journal of Current Microbiology and Applied Sciences
***ISSN: 2319-7706* Volume 14 Number 9 (2025)**
Journal homepage: http://www.ijcmas.com

Original Research Article https://doi.org/10.20546/ijcmas.2025.1409.015

Pediatric Abdominal Tuberculosis: A Diagnostic Challenge

Harman Multani[1], Rajni Bharti[2], Priyanka Sharma[3*], Rohin Sanjeevani[4] and Sandeep Dogra[5]

Department of Microbiology, GMC Jammu, Jammu and Kashmir, India

**Corresponding author*

Keywords

Pediatric Tuberculosis, CBNAAT, Extrapulmonary TB, Childhood Morbidity, Diagnostic Challenge

Article Info

Received:
08 July 2025
Accepted:
21 August 2025
Available Online:
10 September 2025

A B S T R A C T

Tuberculosis (TB) remains one of the leading causes of childhood morbidity and mortality worldwide, with India bearing a significant proportion of the global burden. Abdominal tuberculosis (ATB), although rare in children, presents a major diagnostic challenge due to its nonspecific clinical manifestations and low microbiological yield. This study aimed to evaluate the clinical profile, diagnostic approaches, and outcomes of pediatric abdominal TB cases. A retrospective review was conducted over a one-year period (January–December 2022) at the Intermediate Referral Laboratory for Tuberculosis, Government Medical College, Jammu. A total of 347 extrapulmonary TB samples, including gastric lavage, peritoneal fluid, and ascitic fluid, were analyzed using clinical, radiological, and microbiological methods, with CBNAAT employed for confirmation. Of these, 323 samples were from pediatric patients, and 8 (2.5%) were confirmed positive for Mycobacterium tuberculosis. The predominant symptoms included abdominal pain, fever, weight loss, diarrhea, and abdominal lump, often associated with ultrasound/CT findings of bowel thickening, lymphadenopathy, and mild ascites. A family history of pulmonary TB was present in all cases. Treatment consisted of a six-month regimen of isoniazid, rifampicin, pyrazinamide, and ethambutol, resulting in recovery in 50% of patients, while four children, including one defaulter, succumbed to the illness. The study highlights the importance of maintaining a high index of suspicion for pediatric ATB, particularly in endemic regions, and underscores the need for early diagnosis through imaging and molecular methods. Despite poor microbiological yield, timely initiation of therapy can improve outcomes. Strengthening awareness and early detection strategies are crucial to reducing the disease burden.

Introduction

Tuberculosis remains (TB) to be one of the most common causes of child morbidity and mortality. The World Health Organization (WHO) has estimated that in 2021, more than 550,000 children fell ill with TB and that TB was the main cause of death in 224,000 children (1). TB is endemic in India, and it accounts for about a quarter of the global TB cases, the highest in the world(2).Almost 10% of the cases of TB in India are of paediatric TB, with pulmonary involvement being the most common site of involvement(3).Overall, abdominal TB (ATB) is the sixth most frequent extra pulmonary site(4). It is an uncommon presentation of TB, seen in only 0.3% of pediatric TB (5). Abdominal tuberculosis in children poses a diagnostic challenge because of its nonspecific clinical features, which often delay the diagnosis. It may be associated with involvement of the

gastrointestinal (GI) tract, peritoneum, lymph nodes, or solid viscera.

These figures are probably misconstrues due to nonspecific presentation that gives the impression of other conditions or abdominal involvement that passes unnoticed in the presence of pulmonary TB. Furthermore, ultrasound or other imaging, invasive sampling, and culture for microbiological confirmation are often not available in far flung settings with high TB burden. Overall, abdominal pain (61.5 –81%), fever (31-90%), and weight loss (40 –74%) are the most frequent findings on presentation. In patients of the pediatric age group, loss of body weight is defined as >5% weight loss in the preceding 3 months. In a child presenting with these triad of symptoms one should suspect abdominal TB. The diagnosis of abdominal TB can be strongly suspected on the base of imaging findings and/or laparoscopy/laparotomy findings, but can only have a definitive confirmation when *M. tuberculosis* is detected in abdominal specimens (i.e., ascites, lymph nodes, or peritoneal tissue biopsy during surgery) or, in secondary cases, in the respiratory or gastric secretions through smear microscopy, culture, or molecular methods (6).

Materials and Methods

The present study carried out a 1 year retrospective review of the medical records of all of our patients registered between January 2022 and December 2022 who came to us for testing of EPTB samples that included Gastric lavage, peritoneal fluid and ascitic fluid in the Intermediate Referral Laboratory for Tuberculosis, Chest and Disease Hospital under Government Medical College, Jammu, India. They were diagnosed clinically, radiological, microscopy and confirmed by their CBNAAT report.

Results and Discussion

Total number of samples received during 1 year duration was 347 out of which, 8 were positive for MTB and in rest of the cases, MTB was not detected. Out of 347 patients, 182 were males and 165 were females. Total number of samples from paediatric patients was 323 and only 24 were from adults.

In the present study, over a period of 1year, 8 paediatric patients were positive for abdominal tuberculosis gastric lavage by CBNAAT. Patient presented mostly with symptoms of cough and fever followed by pain abdomen, loose stools, weight loss, and loss of appetite.

USG/CT abdomen showing thickening and inflammatory changes in bowel loops, omentum and lymph nodes and involving visceral organs like liver and spleen. Mild ascites was detected in 3 out of 8 children. There was a family history of pulmonary tuberculosis in all of our cases. 4 out of 8 children died which included 1 defaulter patient. Rest of the children were cured of abdominal tuberculosis after 6 months of therapy which included Isoniazid, Rifampicin, Pyrzinamide, Ethambutol for 2 months and then Isoniazid, Rifampicin, Ethambutol for 4 months and were rendered Tuberculosis free. Household contacts were given Isoniazid prophylaxis.

Tuberculous infection is still a significant cause of morbidity and mortality in the world when it comes to developing countries like India. It is difficult to identify the disease and it is important to have an early diagnosis in order to prevent an uncontrolled evolution with development of severe abdominal damage associated with potential long-term effects into adulthood[7,8].

Table.1 Type of sample received

Gastric Lavage	**325**
Peritoneal Fluid	8
Ascitic Fluid	14

Table.2 Showing age distribution

Age	Total Number
0-5yrs	2
6-11yrs	2
>12 yrs	3

Table.3 Yield of various investigations for the diagnosis of paediatric abdominal tuberculosis

BCG	**Yes(7)**	**No(1)**		
Montoux test	Positive(5)	Negative(3)		
Microscopy ZN staining	Positive(3)	Negative(5)		
WBC COUNT /mm^3 >4000	6 >4000/mm^3	2		
Imaging USG/CECT	Gastrointestinal tract-7(87.5%)	Abdominal lymphnodes-7 (87.5%)	Peritoneal Cavity-4(50%)	Visceral Organs - 2(25%)
CBNAAT **Gastric Lavage**	8 positive			

Table.4 Abdominal Tuberculosis in children: Clinical presentation

Symptoms	***n*(%)**	**Signs**	***n*(%)**
Cough	25(2)	Pallor	75(6)
Fever	62.5(5)	Abdominal tenderness	87.5(7)
Failure to thrive/weight loss	75(6)	Ascites	37.5(3)
Diarrhoea	50(4)	Heptospleenomegaly	25(2)
Abdominal lump	50(4)	----------	
Headache	25(2)	----------	

The clinical features of ATB are often nonspecific, resulting in diagnostic delays for physicians. Abdominal pain, fever, and weight loss were the most frequent findings on presentation, and a triad of these symptoms was present in more than half of our patients which was concordant with the study of *Shah I and Uppuluri R*[9]. The gold standard of diagnosis of TB in children is the triad of contact with a patient with active TB, positive TST and compatible physical and radiological findings

It is important to try and obtain microbiological evidence in all cases as ATB may mimic other diseases such as Crohn's disease and abdominal lymphoma. Unfortunately, the diagnostic yield is low in microscopy owing to its paucibacillary nature in children. A total of 8 children were confirmed cases that is 2.5% these patients were confirmed on the basis of demonstration of Bacteriological , laboratory and radiological findings along with presence of clinical symptoms suggestive of abdominal tuberculosis. Acid-fast bacilli was positive in only 37.5% of our patients, which is similar to the 32–35% yield reported in literature[10]. An abnormal abdominal imaging played a pivotal role in the diagnosis of our patients and was suggestive in ~90% of them which is consistent with *lal SB et al.*[11] Abdominal Tb is often initially confused with other diseases and the diagnosis is usually delayed. In our study fever, weight loss and abdominal tenderness were the most frequent findings in alliance with the studies done by Delise M et al[12] and Malik R et al[13].

Overall, as the diagnostic yield is poor, if there is a strong clinical suspicion and other causes have been excluded, it becomes important to start treatment with a close follow up. For a newly diagnosed child with abdominal TB, Intensive phase consists of 8 weeks of Isoniazid, Rifampicin, Pyrazi- namide and Ethambutol. This is followed by 16 –40 weeks of three drugs Isoniazid, Rifampicin and Ethambutol as a contin- uation phase. The optimal duration of treatment for pediatric ATB is unclear. A shorter duration of treatment increases compliance and decrease the risk of toxicity of the drugs. However, it may also pose a risk for relapses.[14]

The recovery rate was 50% in our study and they showed good response to the treatment. 50% was the morbidity because the compliance was poor and they were the defaulters who left the treatment in between. This is in contrast to the study of *lal SB et al*[11] where the recovery rate was 100%.

In conclusion, TB is still a major cause of mortality and morbidity worldwide. A triad of abdominal pain, fever, and loss of weight is suggestive of abdominal tuberculosis. Due to its high fatality rate, early diagnosis is very important. Microbiological yield is low, and one often has to start therapy based on a strong clinical suspicion. Laparoscopy and peritoneal biopsy along with radiological findings are still the most reliable, quick and safe methods for the diagnosis of abdominal tuberculosis.

Author Contributions

Harman Multani: Investigation, formal analysis, writing—original draft. Rajni Bharti: Validation, methodology, writing—reviewing. Priyanka Sharma:—Formal analysis, writing—review and editing. Rohin Sanjeevani: Investigation, writing—reviewing. Sandeep Dogra: Resources, investigation writing—reviewing—original draft.

Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical Approval Not applicable.

Consent to Participate Not applicable.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no competing interests.

References

1. World Health Organization Global Tuberculosis. Report 2022. ((accessed on 15 January 2023)). Available online: https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2022
2. World Health Organization . *Global Tuberculosis Report 2016* Geneva: The Organization, 2016;1–192. Cited 20 May 2019. Available from URL: https://apps.who.int/medicinedocs/en/d/Js23098en/
3. Mandal A, Singh A. Recent changes in tuberculosis guidelines for children. *Mycobact. Dis.* 2017; 7: 237.
4. Sharma MP, Bhatia V. Abdominal tuberculosis. *Indian J. Med. Res.* 2004; 120: 305–15.
5. Delisle M, Seguin J, Zeilinski D, Moore DL. Paediatric abdominal tuberculosis in developed countries: case series and literature review. *Arch. Dis. Child.* 2016; 101: 253–8.
6. Migliori G.B., Wu S.J., Matteelli A., Zenner D., Goletti D., Ahmedov S., Al-Abri S., Allen D.M., Balcells M.E., Garcia-Basteiro A.L., et al. Clinical standards for the diagnosis, treatment and prevention of TB infection. *Int. J. Tuberc. Lung Dis.* 2022;26:190–205. https://doi.org/10.5588/ijtld.21.0753
7. Sartoris G., Seddon J.A., Rabie H., Nel E.D., Losurdo G., Schaaf H.S. Abdominal Involvement in Children With Bacteriologically Confirmed Tuberculosis: A Five-year Experience From Cape Town, South Africa. *Pediatr. Infect. Dis. J.* 2020;39:914–919. https://doi.org/10.1097/INF.0000000000002749
8. Nel EDSchaaf H.S., Zumla A.I. *Tuberculosis: A Comprehensive Clinical Reference.* Elsevier Publishers; London, UK: 2009. Abdominal Tuberculosis in Children; pp. 432–437.
9. Shah I, Uppuluri R. Clinical profile of abdominal tuberculosis in children. *Indian J. Med. Sci.* 2010; 64: 204–9.
10. Delisle M, Seguin J, Zeilinski D, Moore DL. Paediatric abdominal tuberculosis in developed countries: case series and literature review. *Arch. Dis. Child.* 2016; 101: 253–8
11. Lal SB, Bolia R, Menon JV, Venkatesh V, Bhatia A, Vaiphei K, Yadav R, Sethi S. Abdominal tuberculosis in children: A real-world experience of

218 cases from an endemic region. JGH Open. 2019 Aug 20;4(2):215-220. https://doi.org/10.1002/jgh3.12245

12. Delisle M, Seguin J, Zeilinski D, et al. Paediatric abdominal tuberculosis in developed countries: case series and literature review (published correction appears in Arch Dis Child. 2016 Apr;101(4):411). *Arch Dis Child*. 2016; 101:253–258
13. Malik R, Srivastava A, Yachha SK, et al. Childhood abdominal tuberculosis: Disease patterns, diagnosis, and drug resistance. *Indian J Gastroenterol*. 2015; 34:418–425.
14. Bolia R.Paediatric Abdominal Tuberculosis: A disease with many faces.Paediatric gut and liver journal.2020 ,Vol-2,number-3,4.

How to cite this article:

Harman Multani, Rajni Bharti, Priyanka Sharma, Rohin Sanjeevani4 and Sandeep Dogra. 2025. Pediatric Abdominal Tuberculosis: A Diagnostic Challenge. *Int.J.Curr.Microbiol.App.Sci.* 14(09): 137-141.
doi: https://doi.org/10.20546/ijcmas.2025.1409.015