

Clinical Study of Abdominal Tuberculosis in Children.

Kannepalli Srinivas¹, Goriparthi Ratnakumari²

¹Assistant Professor, Department of Pediatric Surgery, RIMS, Srikakulam, A.P.

²Assistant Professor, Department of Pediatrics, RIMS, Srikakulam, A.P.

ABSTRACT

Background: Abdominal TB is well described in adults, but is relatively rare in children in the modern era. Abdominal involvement is uncommon in children, occurring with an incidence of approximately 10% under the age of 10 years. Due to multiple manifestations a high index of suspicion accompanied by the appropriate investigations help in diagnosis. The diagnosis of gastrointestinal tuberculosis is challenging as it presents with a variety of symptoms. A high index of suspicion is essential. Medical treatment is the mainstay of therapy. The role of surgery is principally in diagnosis and the management of complications. **Methods:** This hospital based observational study was conducted prospectively for two years in a tertiary care hospital. Data including presenting symptoms (distension of abdomen, pain abdomen, lump abdomen), Signs (Loculated ascites, perforation & peritonitis) history of Bacille Calmette- Guerin vaccination, lesion sites, laboratory data, image findings, diagnosis, tuberculin skin test, risk factors, treatment, and outcome were collected and analyzed. **Results:** The present study conducted over a period of two years in a tertiary care hospital, a total number of 15 cases were presented by M: F 6:9 ratio. Preponderance (10 patients) was found in the age group of 10-15 years. Adenosine deaminase levels >32 IU/l taken as significant. 6 cases presented as ascitic form of abdominal tuberculosis in this series and all cases had significant ADA levels. 8 cases were confirmed with histopathological examination. **Conclusion:** Abdominal Tuberculosis in children is uncommon and present with protean manifestations. Ascitic fluid adenosine deaminase level more than 32 IU/L has significant clinical correlation in ascitic form of abdominal tuberculosis. The commonest complication of gastrointestinal tuberculosis is intestinal obstruction. Diagnostic laparoscopy is useful in cases presented with chronic pain abdomen with nonspecific clinicoradiological findings mainly in peritoneal tuberculosis. Surgical intervention has tremendous role in treating the complications.

Keywords: Abdominal Tuberculosis, Adenosine deaminase, children.

INTRODUCTION

Tuberculosis continues to be a health problem in India despite major advancements and results in significant morbidity and mortality. There is a re-emergence of tuberculosis in India, especially the extra pulmonary (intestinal) variant due to incomplete treatment, occurrence of multidrug – resistant strains, and an increasing incidence of HIV-AIDS.

Abdominal tuberculosis is defined as Tuberculosis infection of the abdomen including gastrointestinal tract, peritoneum, omentum, mesentery and its nodes and other solid intra-abdominal organs like liver, spleen and pancreas. It is one of the most common forms of extra-pulmonary tuberculosis.

Abdominal TB is well described in adults, but is relatively rare in children in the modern era. Abdominal involvement is uncommon in children, occurring with an incidence of approximately 10% under the age of 10 years^[1] with complicating pulmonary TB in 1–5% of cases.^[2]

Mycobacterium tuberculosis, *mycobacterium bovis*, and *Atypical mycobacteria* can cause abdominal tuberculosis. Abdominal pain and lump are the most common presenting symptoms. Symptoms of toxemia such as fever, wt. loss and night sweats are often present.

Due to multiple manifestations a high index of suspicion accompanied by the appropriate investigations help in diagnosis. However identification of acid-fast bacilli or caseating granuloma or culture positivity are still gold standard investigations.

The diagnosis of gastrointestinal tuberculosis is challenging as it presents with a variety of symptoms. A high index of suspicion is essential. The arrival of genetic tests, laparoscopy, improved endoscopy and radiology has aided the clinician in arriving at an earlier diagnosis. Medical treatment is the mainstay of therapy. However, the high cost of treatment, the development of multidrug-resistant strains and infection with atypical mycobacteria in immunocompromised patients have all increased the incidence and severity of abdominal tuberculosis. The role of surgery is principally in diagnosis and the management of complications.

MATERIALS AND METHODS

This hospital based observational study was conducted prospectively for two years in a tertiary care hospital. Data including presenting symptoms (distension of abdomen, pain abdomen, lump abdomen), Signs (Loculated ascites, perforation & peritonitis) history of Bacille Calmette- Guerin vaccination, lesion sites, laboratory data, image findings, diagnosis, tuberculin skin test, risk factors, treatment, and outcome were collected and analyzed.

Name & Address of Corresponding Author

Dr Kannepalli Srinivas
Assistant Professor,
Department of Pediatric Surgery,
RIMS, Srikakulam, A.P., India.
E mail: srinvas@rediffmail.com

The detailed clinical examination done, some patients underwent emergency laparotomy or elective laparotomy whichever was necessary. Intraoperative biopsy took and does ileotransverse anastomosis/perforation closure /stricturoplasty/right hemicolectomy /resection of segment involved and end-end anastomosis.

In other patients if ascites present aspirate the fluid directly or ultrasound guided and send it for biochemical, cytological analysis, ADA levels.

In patients with sub-acute intestinal obstruction kept for conservative management and followed by Anti-tuberculosis treatment after excluding other conditions.

RESULTS

The present study conducted over a period of two years in a tertiary care hospital, a total number of 15 cases were presented. There were 6 male patients and 9 female patients in this study group. Preponderance (10 patients) was found in the age group of 10-15 years and slight increase in the female sex.

Out of 15 cases, studied 8 cases were confirmed with histopathological examination.

Adenosine deaminase activity was increased in tuberculous ascitic fluid and was proportional to the degree of T-cell differentiation in the present study ascitic fluid. Adenosine deaminase levels >32 IU/l taken as significant. 6 cases presented as ascitic form of abdominal tuberculosis in this series and all cases had significant ADA levels.

In the present study, most patients have constitutional symptoms of fever (33.33%), pain (87.03%), constipation (53.70%), and weight loss (57.40%). Symptoms of intestinal obstruction, vomiting (62.96 %), and abdominal distension (57.40%) were seen in some cases.

In the present study the commonest presentation was intestinal obstruction showing the signs such as distension of abdomen, tenderness, rigidity & guarding. Peripheral lymphadenopathy and cough help in the etiology of abdominal findings. Doughy feel of the abdomen is non-specific. Ascitic fluid was straw colored, cytological and biochemical analysis point towards the abdominal tuberculosis.

Active pulmonary tuberculosis in 1 (6.6%) case and associated pleural effusion in one patient. It is mandatory to take a chest X ray to know the associated tuberculosis. The majority of the patients (9no.) had symptoms of less than 1 year. A considerable number of patients (8 no.) had symptoms below 3 months.

In the present study most common site of involvement, was ileocaecal region and emergency surgical intervention needed in 2 patients who were presented either acute obstruction or perforation. Ileocaecal resection anastomosis done in 1 cases, resection of small intestine and end-end

anastomosis in 1 case. Diagnostic laparoscopy done in 5 cases and found peritoneal tubercles, omental involvement and took biopsies.

DISCUSSION

Abdominal tuberculosis usually caused due to hematogenous spread or by the ingestion of sputum containing tuberculosis bacilli, the consumption of contaminated milk or food products, or by direct spread from neighbouring structures.^[3] Peritoneal tuberculosis, with no gastrointestinal lesions, is always secondary and results from reactivation of a latent peritoneal focus from previous hematogenous spread or as a part of active pulmonary tuberculosis with miliary dissemination. It is usually caused by *M. tuberculosis*.^[4]

In the present study out of 15 patients, 10 patients are in the age of 10-15 years. A slight female preponderance has been described.^[4] In the present study also there is slight female preponderance i.e., 9 patients out of 15 studied.

Abdominal pain is the most common symptom and present in almost all cases. Pain is more commonly present at the right lower quadrant of the abdomen; though significant proportion of patients may complain of diffuse, central, epigastric or lower quadrant pain.

Fever has been reported as 40-70% of patients In the present study 60% have complaint of fever. Weight loss is another common complaint.^[5]

Examination of abdomen generally revealed tenderness in right iliac fossa, abdominal distension with increased peristaltic activity is generally associated with intestinal obstruction. The classic doughy abdomen has been described in 6 to 11% of patients.^[5]

Intestinal obstruction is the commonest complication of gastrointestinal tuberculosis. In India, around 3- 20 % of all cases of bowel obstruction due to tuberculosis. In a large series of 348 cases of intestinal obstruction, Bhansali & Sethana found tuberculosis to be responsible for 15.5 % of cases.^[6] Tandon et al., studied 186 patients over 5 year and observed an increase in patients with more protracted course and subacute intestinal obstruction in recent years.^[7] In the present study 63 % of cases present with intestinal obstruction, majority sub-acute in nature. Surgical intervention required in 33 % of cases, out of these 40 % needed emergency intervention.

The ascitic fluid in tuberculosis is straw colored with protein >3gm/dl, and total cell count of 150 - 4000 cells/cu.mm, consisting predominantly of lymphocytes. The yield of organisms on smear and culture is low. Staining for acid-fast bacilli is positive in less than 3%. A positive culture obtained in <20 % of cases.

ADA is increased in tuberculous ascites due to the stimulation of T-cells by mycobacterial antigens.

Taking a cut off value 32 IU/L, the sensitivity, specificity, diagnostic accuracy were 100, 97, 98 percent respectively study by Dwivedi et al.^[8] In the study of Bharghava et al^[9] serum ADA level above 54 IU/L, ascitic fluid ADA level 36IU/L and ascitic fluid to serum ADA ratio 0.985 were found suggestive of tuberculosis. In the present study ascitic fluid ADA level >32IU/L taken as cut-off value, out of 6 cases all shown significant rise in ascitic fluid ADA levels.

Laparoscopy is considered the most appropriate because its ability to visualize the peritoneal cavity in detail and take biopsies from suspected lesions at the same time being minimally invasive and less morbid. Bharghava et al^[9] studied 87 patients with high protein ascites, of which 38 were diagnosed as having tuberculosis. They found visual appearances to be more helpful (95% accurate) than either histology, culture or inoculation (82,3 & 37.5 % respectively). In present study in 5 cases of chronic pain abdomen underwent laparoscopy and took biopsies, all cases confirmed as tuberculosis on HPE. Most common site of involvement was ileocaecal region.

The recommended surgical procedures today are conservative. Two reports suggest that obstructing intestinal lesions may relieve with anti-tubercular drugs without surgery. The clinical and radiological resolution of tuberculous strictures with drug therapy even in patients with sub-acute intestinal obstruction.^[8-10] The patients with obstructive symptoms using medical therapy. At the end of 1 year 91 % showed clinical improvement, 70 percent had complete radiological resolution and surgery needed in only 3 cases (8%). Predictors of need for surgery were long strictures (>12cm) and multiple areas of involvement. The mean time required for relief of obstructive symptoms was 6 months.

In the present study, 10 cases treated conservatively with medical therapy, 6 cases presented as sub-acute, 4 cases of chronic type. On follow-up, all cases of sub-acute obstruction relieved of symptoms & resolution of disease with medical therapy.

CONCLUSION

Abdominal Tuberculosis in children is uncommon and present with protean manifestations. Ascitic fluid adenosine deaminase level more than 32 IU/L has significant clinical correlation in ascitic form of abdominal tuberculosis. The commonest complication of gastrointestinal tuberculosis is intestinal obstruction. Diagnostic laparoscopy is useful in cases presented with chronic pain abdomen with nonspecific clinicoradiological findings mainly in peritoneal tuberculosis. Surgical intervention has a tremendous role in treating the complications like acute obstruction, perforation

of bowel wall due to abdominal tuberculosis, followed by medical therapy. In sub-acute intestinal obstruction & chronic cases can be treated by conservative and medical management

REFERENCES

1. Johnson CA, Hill ID, Bowie MD. Abdominal tuberculosis in children. A Survey of cases at the Red Cross War Memorial Children's Hospital, 1976–1985. *S Afr Med J.* 1987;72:20–2.
2. Aston NO. Abdominal tuberculosis. *World J Surg.* 1997;21:492–9.
3. Horvath KD, Whelan RL. Intestinal tuberculosis: return of an old disease. *Am J Gastroenterol.* 1998;93:692–6.
4. Reuter H, Wood R, Schaaf HS, Donald PR. Overview of extrapulmonary tuberculosis in adults and children. In Schaaff HS, Zumla A. *Tuberculosis, A Comprehensive Clinical Reference.* Saunders: Elsevier. 2009;377–90.
5. Marshal JB, Tuberculosis of the gastrointestinal tract and peritoneum. *Am J Gastroenterol.* 1993;88:989–99
6. Bhansali SK, Sethna JK, Intestinal obstruction; a clinical analysis of 348 cases. *Indian J. surg.* 1970;32: 57–7
7. Tandon RK, Sarin SK, Bose SL, Berni M, Tandon BN, A clinicoradiological reappraisal of Intestinal tuberculosis-changing profile: *J. Gastroenterol.* 1986;21:17–22.
8. Dwivedi M, Mishra V, Kumar R, Value of ADA estimation in the diagnosis of TB ascites. *Am J Gastroenterol.* 1990; 85:123.
9. Bharghava DK, Gupta M, Nijhawan S., Dasarathy S, Kushwaha AKS. ADA in Paritoneal tuberculosis: diagnostic value in ascitic fluid and serum. *Tubercle* 1990;71:121–26
10. Anand BS, Nanda R, Sachdev GK. Response of tuberculous stricture to ATT GUT. 1988;28:62–69.

How to cite this article: Srinivas K, Ratnakumari G. Clinical Study of Abdominal Tuberculosis in Children. *Ann. Int. Med. Den. Res.* 2016;2(1):340–42.

Source of Support: Nil, **Conflict of Interest:** None declared.