

# Splenic tuberculosis: a comprehensive review of literature

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## ABSTRACT:

Tuberculosis(TB) is one of the most common infections affecting the population in the developing countries. With the rising human immunodeficiency(HIV) infection its incidence is on a rise even in the developed countries. Pulmonary TB is the commonest form of infection, However multiple extrapulmonary sites have also been reported. Spleen is thought to be a rare organ involved in this infection. Various presentations of the splenic TB have been reported in literature. The definitive diagnosis of this is essentially formulated on the post splenectomy specimen. A consensus statement based on the available case reports is lacking. The authors are providing an insight into this form of extrapulmonary TB after reviewing the available literature.

## KEYWORDS:

tuberculosis, spleen, antitubercular therapy

## INTRODUCTION

Tuberculosis is an infectious disease affecting nearly 13 million people worldwide[1]. It is one of the leading cause of mortality among infectious disease[2]. It is a major public health problem in developing world. However, the incidence of the infection is rising in the developed countries due to increased coinfection with the human immunodeficiency virus(HIV)[3]. Pulmonary TB is the commonest form of infection. It may involve many extrapulmonary sites also. Abdominal TB can be lymphnodal, gastrointestinal, peritoneal or visceral[4]. The concomitant infection of the lungs is present in 15% of the cases[5]. The genitourinary TB is the most common form of visceral TB[6]. Non genitourinary TB constitutes about 15% of the abdominal TB[7]. Spleen is invariably involved in the disseminated form of abdominal TB[8]. It is one of the rare viscera to be involved in this infection. It is present in immunocompromised individuals[9]. It is the third most common organ involved in the immunocompromised individuals. Multiple reports of splenic TB in a immunocompetent host have been reported in literature[10]. The infection is primarily a postoperative diagnosis. Good Imaging and preoperative suspicion can help in establishing a diagnosis without splenectomy. The authors are providing an insight into the pathogenesis, clinical features and diagnosis of this rare entity.

## EPIDEMIOLOGY AND PATHOGENESIS

Splenic TB is a rare form of infection. It was first reported by Coley in 1846[11]. Bhansali et al [12] in a review of 300 patients of abdominal TB didn't find a single patient with splenic involvement. Simu et al [13] in their study reported 4% TB in patients who underwent splenectomy. Contrary to this a study from India reported an incidence of 12% in the splenectomy specimen[14]. The high prevalence of this disease in the developing countries might have led to increased incidence in this report.

The viscera are involved secondary to hematogenous dissemination. Lymphatic dissemination is a rare cause of visceral involvement. The TB bacilli lodge in the visceral parenchyma leading to a granulomatous infection[15]. The immunocompetency of the infected individual determines the morphology of the infected organ. The immunocompetent individuals will demonstrate a caseating

necrosis whereas the same will be absent in immunocompromised individuals[16,17]. Various pathological forms of splenic involvement are described. Miliary tuberculosis, nodular tuberculosis, tuberculous spleen abscess, calcific tuberculosis, and mixed type tuberculosis are few among them[11].

Spleen can be involved in two forms. Primary infection is isolated focus of infection in spleen without any other organ involvement, but the presence of a separate focus signifies a secondary infection[18]. Primary infection of spleen is a rare occurrence. Adil et al[19] in their series of 12 patients reported all cases of secondary splenic involvement. Singh et al[20] in their series described 4 patients of primary infection.

## CLINICAL FEATURES

Splenic involvement in tuberculosis is more common in males. The age group involved is 19-53 years[14]. Fever of unknown origin is the typical presentation in most cases [21]. Hepatosplenomegaly, pallor, GI bleed, jaundice and weight loss has been reported in literature[14]. These patients are usually evaluated for fever with hepatosplenomegaly. Splenic TB is traditionally been thought as a cause of small splenomegaly [22] however massive enlargement has also been reported[14]. Most of the cases present as splenic abscess, however presence of ascites [23] along with a splenic mass[24] has also been reported. Splenic TB may be associated with the presence of abdominal and mediastinal lymphadenopathy, psoas abscess, vertebral TB[25]. Isolated splenic involvement when present poses a diagnostic challenge. Incidental detection of a splenic TB was seen in a patient who underwent laparotomy for abdominal trauma[20]. The varied and non specific presentation of this entity makes the preoperative suspicion difficult. This is more true for tropical countries like India where the other causes of fever with splenomegaly eg malaria and dengue are encountered more commonly in clinical practice. Most of these patients are evaluated by general physicians and are subsequently referred to surgery for therapeutic or diagnostic splenectomy[14].

## DIAGNOSIS

The diagnostic workup of the patient involves the hematological

workup. The total leucocyte count of the patient is usually raised. The hematological features of hypersplenism are found in 35% of the patients[14]. Massive splenomegaly is usually associated with hypersplenism. Perisinusoidal inflammation with fibrosis leads to splenic enlargement and obstruction of the venous channels. These obstructed venous channels lead to the destruction of various blood corpuscles shifting the blood profile towards hypersplenism. Bone marrow biopsy was also done in a series by Pottakkat et al[14]. They demonstrated hypercellular bone marrow in 25% of their patients. Erythrocyte sedimentation rate (ESR) may be elevated[23]. The liver and the renal functions are usually normal except in critical cases. Ascitic fluid workup of the patients show an exudative profile [23].

Radiological investigations are an important pillar in the evaluation of these patients. Chest radiogram will show any focus of pulmonary involvement. Mediastinal lymphadenopathy may lead to mediastinal widening. The chest x ray is normal in isolated splenic involvement[18]. Ultrasonography (USG) provides the operator a chance to evaluate the abdominal cavity. Splenic involvement on ultrasonogram can be micronodular or macronodular[26]. Small nodules are usually missed on ultrasonogram and are seen as hypointense lesions on computerized tomograms (CT). Large nodules are seen as hypoechoic lesions on USG whereas the same is as hypointense nodules on CECT. Sharma et al[25] differentiated the splenic lesions as multiple hypoechoic lesions, calcifications and splenic abscess. In their study, the USG corroborated with CT in detection of hypoechoic lesion. The pickup rate of abscess was lower (26% vs 35%) on USG. CT had more sensitivity (8%) to pick up the calcific changes in the spleen.

Magnetic resonance imaging (MRI) has long been used to diagnose this particular ailment. However, the findings of MRI are based on the stage of tuberculosis[15]. The findings on T1 sequence shows high signal intensity for the entire lesion. T2 images show irregular, internally conglomerated lesions. The peripheral enhancement with central necrosis is seen on post contrast images[24]. The radiological investigations can lead the clinician towards a probable diagnosis however the definitive therapy can only be instituted after a histopathological confirmation.

Preoperative aspiration of the pus and biopsy provides the physician a chance to treat the disease without a morbid surgery[27].

## REFERENCES:

- World Health Organization. Global tuberculosis report 2015. World Health Organization; 2015.
- Pop M, Pop C, Homoroadean D, et al. Abdominal miliary tuberculosis in a patient with AIDS: a case report. *Romanian journal of gastroenterology*. 2003;12(3):231-4.
- Albalak R, O'Brien RJ, Kammerer JS, et al. Trends in tuberculosis/human immunodeficiency virus comorbidity, United States, 1993- 2004. *Archives of internal medicine*. 2007;167(22):2443-52.
- Debi U, Ravisankar V, Prasad KK, et al. Abdominal tuberculosis of the gastrointestinal tract: revisited. *World J Gastroenterol*. 2014;20(40):14831-40
- Horvath KD, Whelan RL. Intestinal tuberculosis: return of an old disease. *The American journal of gastroenterology*. 1998 ;93(5):692-6.
- Gunal S, Yang Z, Agarwal M, et al. Demographic and microbial characteristics of extrapulmonary tuberculosis cases diagnosed in Malatya, Turkey, 2001-2007. *BMC public health*. 2011;11(1):154.
- Sinan T, Sheikh M, Ramadan S, et al. CT features in abdominal tuberculosis: 20 years experience. *BMC Med Imaging* 2002;2:3.
- Dubey SG, Shah NM, Mangat GK, et al. Tubercular splenic abscesses in a patient with AIDS. *The Journal of the Association of Physicians of India*. 1996;44(8):575-7.
- Sharma S, Dey AB, Agarwal N, et al. Tuberculosis: a rare cause of splenic abscess. *The Journal of the Association of Physicians of India*. 1999;47(7):740-1.
- Gupta A, Hunjan PS, Jain SK, et al. Tubercular splenic abscess in an immunocompetent patient: a rare entity. *Southeast Asian J Trop Med Public Health*. 2006;37(6):1196-8
- Lin SF, Zheng L, Zhou L. Solitary splenic tuberculosis: a case report and review of the literature. *World journal of surgical oncology*. 2016;14(1):154.
- Bhansali SK. Abdominal tuberculosis: experiences with 300 cases. *Am J Gastroenterol* 1977;67:324-337
- Simu G, Bancu VE, Macavei I, et al. Microscopic patterns in surgically removed spleens. *Rom J Morphol Embryol* 1991;37:81-86
- Pottakkat B, Kumar A, Rastogi A, et al. Tuberculosis of the Spleen as a Cause

- of Fever of Unknown Origin and Splenomegaly. Gut and liver. 2010;4(1):94.
15. Tirumani SH, Ojili V, Gunabushanam G, et al. Imaging of tuberculosis of the abdominal viscera: beyond the intestines. Journal of clinical imaging science. 2013;3.
  16. Frieden TR, Sterling TR, Munsiff SS, et al. Tuberculosis. Lancet 2003;362:887-99.
  17. Eastwood JB, Corbishley CM, Grange JM. Tuberculosis and the kidney. J Am Soc Nephrol 2001;12:1307-14.
  18. Sharma U, Sahu SK, Agrawal S, et al. Primary splenic tuberculosis. Sri Lanka Journal of Surgery. 2016;34(1).
  19. Adil A, Chikhaoui N, Ousehal A, et al. Splenic tuberculosis. Apropos of 12 cases. In Annales de radiologie 1995 ;38(7-8); 403-407.
  20. Singh B, Ramdial PK, Royeppen E, et al. Isolated splenic tuberculosis. Tropical doctor. 2005;35(1):48-9.
  21. Ho PL, Chim CS, Yuen KY. Isolated splenic tuberculosis presenting with pyrexia of unknown origin. Scandinavian journal of infectious diseases. 2000;32(6):700-1.
  22. Fleming AF, De Silva PS. Hematological diseases in the tropics. In: Cook GC, Zumla A, eds. Mansons' tropical diseases. 21st ed. London: Saunders, 2003:178
  23. Lonkar Y, Parikh S, Kumar S, et al. Splenic tuberculosis presenting as ascites in immunocompetent patient. Annals of medical and health sciences research. 2013;3(1):116-8.
  24. Lim J, Yu JS, Hong SW, et al. A case of mass-forming splenic tuberculosis: MRI findings with emphasis of diffusion-weighted imaging characteristics. Journal of Korean medical science. 2011;26(3):457-60.
  25. Sharma SK, Smith-Rohrberg D, Tahir M, et al. Radiological manifestations of splenic tuberculosis: a 23-patient case series from India. Indian Journal of Medical Research. 2007;125(5):669.
  26. Fan ZM, Zeng QY, Huo JW, et al. Macronodular multi-organs tuberculoma: CT and MR appearances. J Gastroenterol 1998;33:285-8.
  27. Ray S, Kundu S, Goswami M, et al. Isolated tubercular splenic abscess: Can we defer splenectomy? Our single experience with anti-tuberculous therapy alone. Indian journal of medical microbiology. 2012;30(1):101.
  28. Fukunaga H, Murakami T, Gondo T, et al. Sensitivity of acid-fast staining for Mycobacterium tuberculosis in formalin-fixed tissue. American journal of respiratory and critical care medicine. 2002;166(7):994-7.
  29. Suri R, Gupta S, Gupta SK, et al. Ultrasound guided fine needle aspiration cytology in abdominal tuberculosis. The British journal of radiology. 1998;71(847):723-7.

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