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# Isolated primary tuberculosis of spleen—A rare entity in the immuno-competent patient

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ABSTRACT

*INTRODUCTION:* Tuberculosis is a global public health concern, with 9.6 million affected individuals worldwide. Current screening and diagnostic regimes focus primarily on smear positivity, and hence, the rising numbers of Sputum negative and Extra-Pulmonary Tuberculosis has become a significant set-back to adequate diagnosis, disease notification and treatment, due to the large number of false negatives.
*PRESENTATION OF CASE:* We hereby describe an intriguing presentation of tuberculosis – A 23 yr old lady with no comorbid illness, came to us with ten month history of on and off pyrexia, weakness and left hypochondriac pain. On evaluation, two isolated hypodense lesions in the spleen were detected. Diagnostic laparoscopy and Splenectomy were performed and histopathology revealed features of primary tubercular abscess.
*DISCUSSION:* Commonly, abdominal visceral involvement is seen as a part of miliary tuberculosis in the immuno-compromised patient. However, in the absence of any co-morbidity and preserved immune function, this case depicts the rare possibility of primary isolated Tubercular splenic abscess in the normal healthy individual.
*CONCLUSION:* We require a close eye and a keen sense of clinical acumen to accurately diagnose and treat smear negative and uncommon forms of Tuberculosis. Considering the growing prevalence and difficulty in disease control, there is need for greater knowledge and awareness to help mitigate the global burden of Tuberculosis.


## 1. Introduction

The World Health Organization (WHO) in 2015 marked a landmark moment in history of the battle against Tuberculosis (TB). The outgoing Stop TB Strategy (2006–2015) aimed to reduce the prevalence of the disease by 50% compared to 1990, whereas the current End TB Strategy (2016–2035) envisions a world free of Tuberculosis. According to latest statistics, 9.6 million people were globally affected by Tuberculosis in 2014, of which 58% population belonged to South East Asia and Western Pacific regions. India alone had a share of 23% of cases, the largest for any country [1].

Another alarming statistic emerges in the world scenario, wherein less than two-thirds of disease positive cases showed symptoms, leaving a relatively large 37% remainder going undiagnosed and unreported. In the Indian scenario, this can largely be accounted for the number of smear negative (25.5%) and Extra Pulmonary (EP) (20.5%) cases of Tuberculosis [2]. Among the Extra pulmonary sites, majority are seen in lymph nodes, pleura, genito-urinary (GU) tract, bones, meninges, gastro-intestinal (GI) tract, peritoneum, and pericardium. Solid organ involvement in EP tuberculosis occurs in miliary form of the disease, with spleen involved only as the third common abdominal viscera, along with liver and kidney [3]. Primary splenic tuberculosis is generally encountered in the setting of immune-compromised host, especially with TB-HIV co-infection. Isolated involvement of the spleen, with no other detectable source is very rare in the immuno-competent individual [4]. The following case report describes the clinical presentation, diagnosis and therapeutic aspects of primary splenic tuberculosis in the immune-competent host, and illustrates the need for close scrutiny and clinical acumen to alleviate the global burden of the disease.

## 2. Presentation of case

A 23 year old lady from Mumbai, India, presented to a tertiary care public hospital with complaints of intermittent low grade

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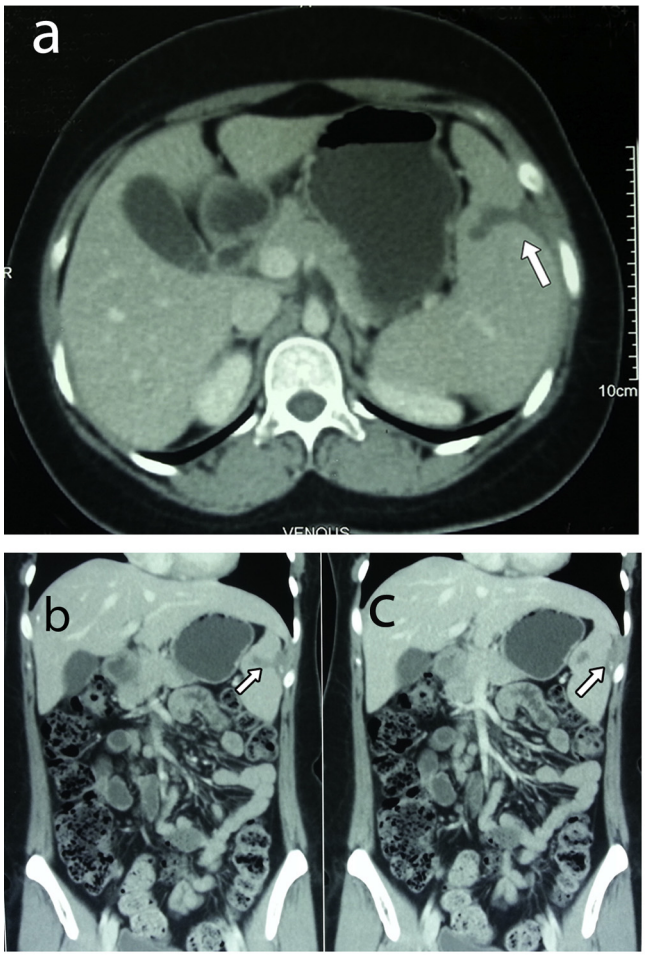


**Fig. 1. a, b & c** – Axial and Coronal Sections of Computed Tomography of abdomen, with arrow showing multiple splenic abscess.

pyrexia, generalised weakness and left sided abdominal pain of 10 months duration, with progression and worsening of pain since last 2 weeks prior to admission. No associated symptomatology was reported. There was previous family history of treated pulmonary tuberculosis, but unremarkable personal or past history. She was well built and nourished with normal vital parameters. Per abdominal examination revealed left hypochondriac and intercostal tenderness, with no obvious organomegaly.

Routine blood work up showed elevated erythrocyte sedimentation rate (ESR) with equivocal reaction to PPD (Mantoux test). Other investigations for pyrexia proved inconclusive. Abdominal imaging with Ultrasound detected two hypoechoic lesions in the spleen; confirmed on Contrast enhanced Computed Tomography (CECT) to have $3.1 \times 1.2$ cm sized and $1 \times 1.1$ cm sized hypodense peripherally enhancing lesions in subcapsular plane in anterior spleen. (Fig. 1a,b,c) Repeated image guided aspiration cytologies were inconclusive due to insufficient sampling. Other invasive histopathological studies like splenic puncture and biopsy were deferred against the option of diagnostic SOS therapeutic laparoscopy.

Intra operatively, peritoneal cavity, GI tract and liver appeared normal. No evidence of ascites or mesenteric lymphadenopathy. Spleen showed evidence of two large superficial abscess, and decision taken for Splenectomy. Post-operative histopathology (Fig. 2) showed multiple caseating granulomas with epitheloid and Langhans giant cells, suggestive of primary Tubercular infection. (Fig. 3a,b) Patient was prescribed anti-tubercular treatment and

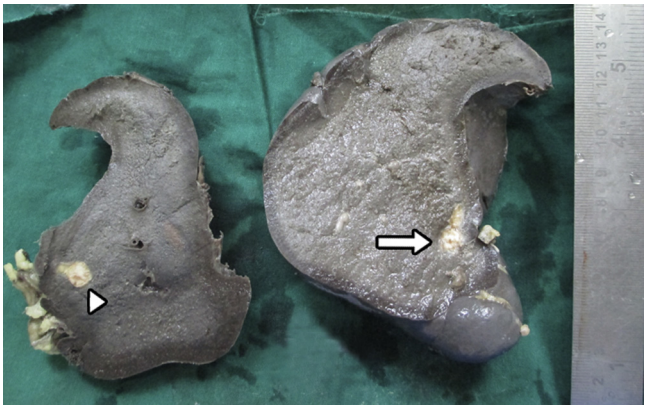

**Fig. 2.** Cut section of resected splenectomy specimen, with arrow and arrowhead pointing to two subcapsular splenic abscesses.

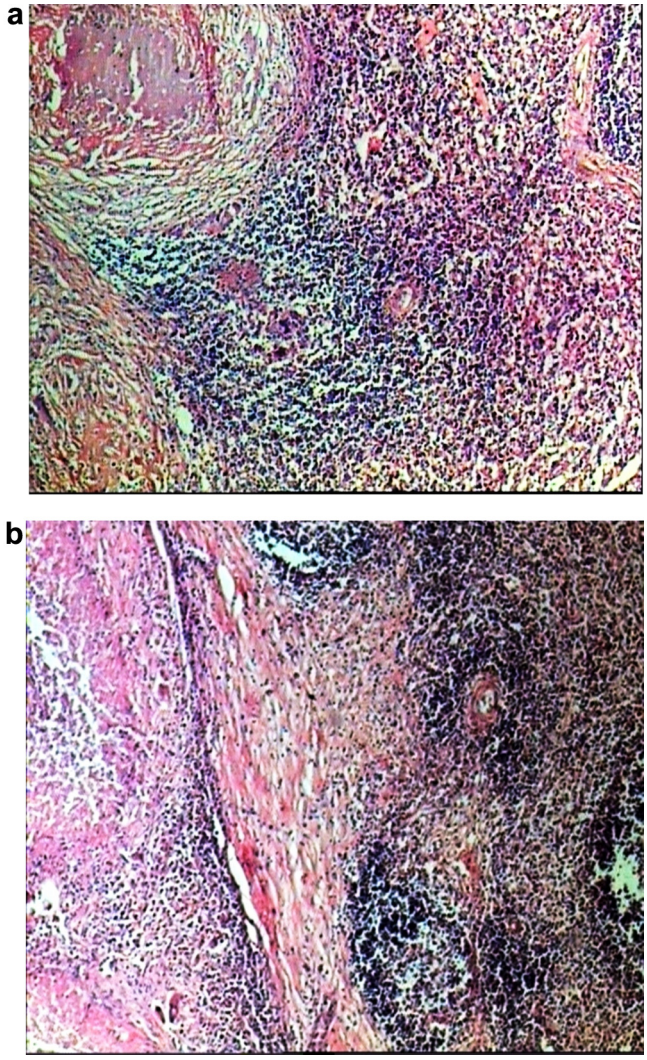


**Fig. 3. a** – Low power view of the sections from the spleen shows coalescing Epithelioid Granulomas with caseation (H & E,X100). **b** – High power view shows epithelioid cells, caseation & multinucleated Langhans type of giant cells in a Splenic Granuloma (H & E, X200).

discharged on 6th post-operative day. She was asymptomatic till six months follow up.

## 3. Discussion

The latest WHO targets, to reduce the number of TB deaths by 90% and new cases by 80% by 2030 [1], requires detection and treatment gaps be addressed. The high prevalence of EP Tuberculosis in endemic parts of the world, and focus on sputum smear positivity for screening and diagnosis, invariably renders a number of cases undiagnosed. Hence, the concept of primary visceral tuberculosis as an entity needs to be incorporated into the armamentarium of every clinician and public health worker.

Splenic tuberculosis usually occurs secondary to haematogenous spread of a primary infection, as a part of disseminated disease [5]. Immunodeficiency is an important risk factor for splenic tuberculosis, including conditions such as hematologic abnormalities, diabetes mellitus, HIV infection, organ transplantation, and chronic steroid therapy [6]. The five morphological classifications for splenic tuberculosis include miliary, nodular, spleen abscess, calcific and mixed type [3]. Splenic abscess is the commonest and most symptomatic stage for presentation [7].

Sporadic case reports exist of splenic tubercular abscess in immunocompetent patient. Only six cases were reported in English, French and German literature from 1965 to 1992 [8]. In Iran, one case was reported in 2002 [9]. Adil A et al reported ten immunocompetent individuals [10], while Singh et al. reported four cases [11] with isolated primary splenic tuberculosis.

Diagnosis of isolated splenic tuberculosis is made by radiologic investigations confirmed by pathologic examination of fine needle aspiration, splenic biopsy or splenectomy specimen. In our case ultrasound and CT scan demonstrated findings similar to those seen in any fungal infection or malignancy [12]. Therefore histopathological examination is necessary for etiological diagnosis, characterised by epithelioid granulomas composed of aggregates of epithelioid cells, lymphocytes and Langhans giant cells with variable degree of central caseous necrosis involving both the red and white pulps. Further confirmation of diagnosis can be done by Polymerase Chain Reaction [7]. Along with Histopathology, it would be prudent to perform a Tubercular culture and antibiotics sensitivity test in view of the surging MDR and XDR Tuberculosis cases world over.

The first-line management of splenic tuberculosis is anti-tubercular chemotherapy, with significant number of the patients responding to therapy. Surgical intervention in primary splenic tuberculosis has rarely been documented in world literature, restricted to laparoscopic punch biopsies for diagnostic purposes [12,13]. The definitive modality of minimally invasive surgical intervention in the form of laparoscopic splenectomy as a diagnostic and therapeutic adjuvant to anti-tubercular therapy, not only mitigates the local symptoms of patient, but also reduces the disease load. Otherwise, surgery may be appropriate in patients having spontaneous splenic rupture or failure of anti-tubercular treatment [3,14].

## 4. Conclusion

In this era of poly-pharmacy and multidrug resistant infections, all measures to mitigate the global health concerns of tuberculosis will require stringent protocols and vigilant screening programs. New diagnostic regimen to minimise false negativity and include extra-pulmonary cases, will significantly contribute to curbing the growth of Tuberculosis worldwide. With this case, we intend to broaden the horizon of knowledge regarding Extra Pulmonary tubercular involvement, with focus on abdominal viscera as a potential site of isolated primary infection, in the absence of any comorbid illness. Moreover, we advocate the usage of diagnostic and therapeutic laparoscopy in the management protocol of this condition; the sensitivity and efficacy of which can only be determined after further studies.

## Conflicts of interest

None.

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## Ethical approval

Observational Study – approved by Institutional Ethics Committe, Grant Govt Medical College, Mumbai, India

## Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Author contribution

Dr. Suneed Kumar – Data collection, analysis, Writing the paper.
Dr. Ajay H. Bhandarwar – Study concept/design, Guarantor of study integrity.
Dr. Pravin N. Tungenwar – Manuscript editing, Final approval.
Dr. Ajay G. Pai – Data Collection, analysis.

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