

## Case Report

# Tuberculosis and Deep Venous Thrombosis, a rare complication of a common disease: A case report

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### Abstract

**Introduction:** Tuberculosis remains an infectious disease with a high prevalence worldwide and represents a major public health issue, especially in our subcontinent. Although venous thromboembolism is a rare complication of this disease, it may be a potentially life threatening event.

**Case presentation:** We report a case of a 43 years male who was diagnosed as a case of pulmonary tuberculosis with tubercular pericardial effusion, developed deep venous thrombosis later in the course of the disease.

**Conclusion:** An association between inflammation induced by tuberculosis and a hypercoagulable state has been described. Therefore, the occurrence of deep venous thrombosis or pulmonary embolic episodes should be considered in patients with tuberculosis particularly during the first weeks of treatment. The physician's awareness of these phenomena is important to an early diagnostic suspicion and prompt treatment in order to prevent fatal outcomes.

**Key words:** Tuberculosis, Deep Venous Thrombosis

### Introduction

Tuberculosis (TB) is one of the most prevalent infectious diseases in our country with an estimated incidence rate of 25.3 per 100,000 populations in 2008<sup>1</sup>. Worldwide, TB is responsible for more than 1.5 million deaths every year<sup>1</sup>, with an estimated rate of 13.7 million prevalent cases of TB in 2007<sup>2</sup>. Therefore, despite recent progress, TB remains an important global public health problem<sup>2</sup>, fact that should draw our attention to venous thromboembolism (VTE) as a possible complication of this disease. Although deep venous thrombosis (DVT) is considered a rare event, it should be taken into consideration particularly in those with severe pulmonary or disseminated tuberculosis, as some authors correlate the risk of developing DVT increasing with the severity of the disease<sup>3</sup>. According to

a retrospective analysis in a South African Hospital in the mid 1980s, White et al. stated that DVT rate was 3.4% within the first two weeks after initiation of therapy<sup>4</sup>. Recently, Ambrosetti et al., performed a nationwide prospective study comprising a routine evaluation of treatment outcomes in TB patients. This Italian group concluded that the prevalence of VTE was 0.6% in the first month of treatment, one third occurring in the first week<sup>5</sup>. Actually, VTE can be the presenting feature of TB<sup>6</sup>, occur a few days after the diagnosis<sup>7</sup> or late in the course of the disease, even in patients on anti-tuberculosis treatment (ATT)<sup>8</sup>. Like other infectious diseases, TB can cause thrombosis by various mechanisms such as local invasion, venous compression<sup>6</sup> or by producing a transitory hypercoagulable state<sup>9,10</sup>.

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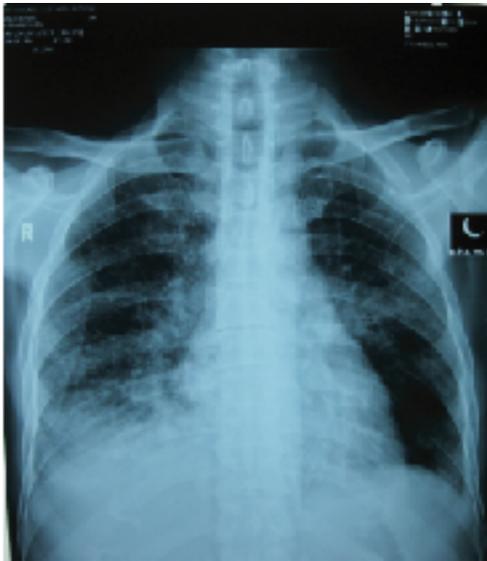
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Recent studies have established a link between haemostatic changes and this prothrombotic phase, and have demonstrated that these can normalize with an adequate ATT<sup>10</sup>. Because VTE can be fatal, it is crucial to suspect it to perform an early diagnosis and initiate prompt treatment<sup>3</sup>. For this reason, patients that respond poorly to ATT, who have other predisposing factors and those in need of a prolonged stay in hospital, should be carefully monitored<sup>10</sup>. We report a case of tuberculosis associated with venous thrombosis.

### Case report

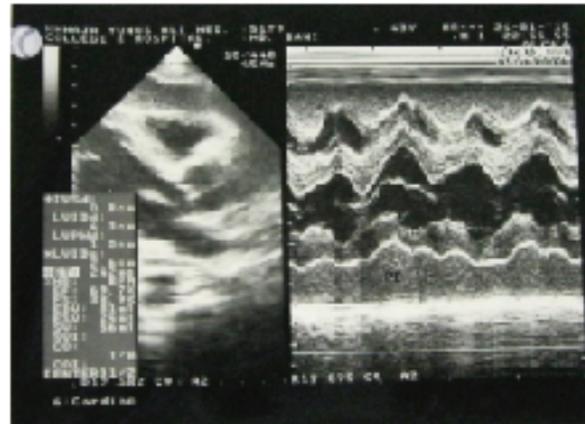
A 43 years old male, smoker, presented with cough and scanty sputum production, and anorexia for nearly one month and respiratory distress on exertion for 1 week. There was no prior history of other diseases and there was no history of alcohol abuse or sexual risk behaviors, recent surgery and other blood disorder. Clinical examination, revealed a ill-looking-man, weighing 48 kg. He was afebrile, normotensive (BP 110/70 mmHg) and tachycardic (pulse 110 bpm). His respiratory rate was normal with an oxygen saturation of 98% in room air. JVP not raised. Examination of precordium revealed soft and rapid heart sound. Chest and abdomen was unremarkable. No peripheral edema was found.

Routine investigations revealed mild anemia (Hb 11 g/dl), leucocytosis (WBC 12.6 G/L) and a high ESR (49). Chest X-ray demonstrated inhomogeneous patchy opacities of both lung fields, more on right lower zone, consistent with tuberculosis (Figure 1).



**Fig 1:** Chest X-ray showing patchy opacities, suggestive of Tuberculosis.

An echocardiography was done which revealed moderate to severe pericardial effusion. Pericardiocentesis was done and study of pericardial fluid typically suggests tubercular cause.



**Fig-2:** Echocardiogram showing pericardial effusion

Sputum was negative for acid-fast bacilli, and MT was positive. Other investigations results normal hepatic, renal and thyroid function, negative viral screening test, mild hyponatremia (132 mEq/L). First line Anti Tubercular Therapy (ATT) with 'Rimstar 4FDC' along with steroid (Prednisolone) was started. After ten days patient again presented complaining of pain and swelling in his left limb for 4 days. Vascular ultrasound revealed femoro-popliteal thrombosis. He was put on low-molecular- weight heparin and warfarin on the same day. 5 days later his symptoms was improved and as target INR was achieved, he was discharged with maintaining dose of warfarin.



**Fig-3:** Left limb deep venous thrombosis. (Photo taken with permission)

## Discussion

Our case show that VTE may complicate severe pulmonary tuberculosis and that these events occur at presentation or later in the course of the disease. Robson et al., found 35 patients with pulmonary TB and DVT. In 33 of them, DVT occurred 7 days after the diagnosis of TB, while only in two, DVT was the presenting feature<sup>11</sup>. Other reports also demonstrate that thrombotic phenomena in patients with pulmonary TB occur in other sites. These may include hepatic veins<sup>8</sup> and cerebral venous sinuses<sup>12</sup>, which reinforces the link between these conditions. Tuberculosis is a disease with a wide variety of clinical presentations and recently, the association between inflammation, haemostatic changes and a hypercoagulable state has been established<sup>9,10</sup>. Robson et al., research study suggested that elevated plasma fibrinogen, impaired fibrinolysis coupled with decreased levels of antithrombin III and reactive thrombocytosis appeared to favour the development of DVT in pulmonary TB<sup>11</sup>.

Similar observations were made by Turken et al., in a case control study, regarding these haemostatic disturbances in 45 patients with active pulmonary TB. Moreover, it stated that these changes improved with ATT within 4 weeks<sup>10</sup>. On the other hand, there is also data supporting a relationship between this prothrombotic phase and a high frequency of antiphospholipid antibodies and protein S deficiency<sup>3</sup>. However, thrombosis can also result from venous compression by lymph nodes in ganglionic forms of TB, as retroperitoneal adenopathies may cause inferior vena cava thrombosis in the absence of any haemostatic abnormalities<sup>6</sup>. These haemostatic changes improve during the first month of ATT<sup>10</sup> and for this reason, it should be immediately started in addition to anticoagulant therapy. Frequently, a higher dose of warfarin is necessary to achieve therapeutic INR levels, because of rifampicin effects on cytochrome P450<sup>13</sup>. Additionally, this drug may also contribute to the hypercoagulable state by decreasing production and increasing clearance of anticoagulant hepatic proteins. Consequently, the initial phase of treatment may result in a higher risk for development of DVT<sup>9</sup>.

## Conclusion

These clinical reports emphasize that patients with severe pulmonary tuberculosis are at risk of developing thromboembolic events. Therefore, these complications should be investigated, especially in those who do not improve on ATT, who have other predisposing factors or

are hospitalized for long periods.

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