

Case Report



Rifampicin Induced Deep Vein Thrombosis: A Case Report

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Received: 18-12-2021; Revised: 15-02-2022; Accepted: 23-02-2022; Published on: 15-03-2022.

ABSTRACT

Rifampicin is an established and effective antibiotic and is the gold standard in the treatment of tuberculosis (TB). Its use is reserved for serious bacterial infections, such as active and latent leprosy. Tuberculosis is the most prevalent infectious disease worldwide as well as in India. Therefore, despite recent progress tuberculosis remains an important global public health problem. According to WHO, TB statistic 2020, the global incidence of TB was 15.6 million and in India, it was 5.6 million. In India, most of the anti-tuberculosis regimens under the Revised National Tuberculosis Control Programme (RNTCP) are rifampicin-based. Deep Vein Thrombosis events are a rare side effect of rifampicin, which has been reported in a few parts of the world. Here we report a case of a male patient with pulmonary tuberculosis initiated on ATT drug regimen presented with deep vein thrombosis due to rifampicin.

Keywords: Rifampicin, Tuberculosis, Deep vein thrombosis.

QUICK RESPONSE CODE →

DOI:
10.47583/ijpsrr.2022.v73i01.008



DOI link: <http://dx.doi.org/10.47583/ijpsrr.2022.v73i01.008>

INTRODUCTION

Tuberculosis is the most prevalent infectious disease worldwide, including in India. A blood clot forms inside a blood vessel, restricting blood flow through the circulatory system.¹ Deep Vein Thrombosis is caused by inherited or hereditary causes, as well as acquired variables. In the absence of genetic causes, a case of unprovoked thrombosis indicates that severe pulmonary thromboembolism can be worsened by venous thromboembolism. This isn't true in all cases.

Provisional hypothesis for occurrence can be:

- + Tuberculosis involves the hematological system and causes anemia, leucopenia, raised levels of plasma fibrinogen and factor VIII, and a downturn of antithrombin III and protein c levels.
- + Local compression of veins by enlarged lymph nodes.
- + Endothelial injury caused by Koch bacillus.
- + Immobility imposed by a hospital stay.²

Hematological problems are rarely seen in pulmonary tuberculosis. Pulmonary tuberculosis has been linked to a few cases of systemic hematological sequelae such as

disseminated intravascular coagulation and deep vein thrombosis.³

CASE REPORT

A male patient aged 31 presented to the emergency department with swelling of the left foot and lower limb for 10 days, the pain of the left lower limb. The patient had a past medical history of pulmonary tuberculosis for five months. He was using ATT drugs under RNTCP which includes Isoniazid, Rifampicin, Pyrazinamide, Ethambutol. He had no history of recent surgeries. He noticed swelling of the left lower limb after initiation of ATT.

General physical examination revealed poorly built malnourished men weighing 49kg. He was afebrile, pulse rate was 80bpm blood pressure 120/70mmhg. His respiratory rate was 20 with oxygen saturation of 95% on room air and grade 3 clubbing was noted on day-3. Lower limb examination revealed stiffness in the left calf and pain, redness, or tenderness. Cardiovascular and abdominal examination was normal.

Laboratory findings on admission revealed low hemoglobin 7.9gm%, normal WBC count, and platelet count (9,110/cu mm, 2,45,000/cu mm). Plasma fibrinogen, Renal function tests, Liver function tests were normal. Thyroid-stimulating hormone (TSH) 2.33mIU/L, free T₄ - 13.1pmol/L was found to be normal. On examination for the hypercoagulable state, protein C and S, antithrombin antineutrophilic antibody are normal; antibodies for HIV by ELISA are negative. Ultrasonography of the abdomen was normal. Electrocardiogram was found to be normal. Doppler USG of the venous system of the left lower limb: GSV (great saphenous vein) measuring 10mm in thigh and thrombus extending up to common femoral vein. Gross



subcutaneous edema with hyperechoic fat separated by hypoechoic fluid-filled areas "cobble-stone" appearance in ankle and foot region and the edema is limited to the subcutaneous plane.



Figure 1: At time of admission

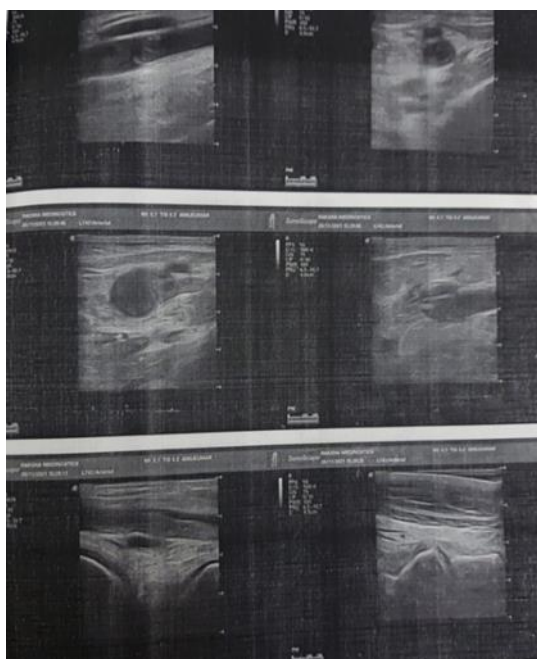


Figure 2: Color doppler report

Along with the continuation of ATT-CP (4th month, 3 tablets per day), the patient was treated with low molecular weight heparin (40mg twice daily), and 4 days later, warfarin (2mg) was started. On ATT and after one and a half weeks in the hospital the patient presented a positive response with improvement in constitutional symptoms and swelling of lower limb decreased. The patient was discharged and advised regarding the continuation of ATT and regular follow-up. The patient has

now completed 2 months on the ATT regimen with a good clinical reaction.

DISCUSSION

Rifampicin is one of the first-line medications used to treat Tuberculosis treatment. It works by blocking the DNA-dependent RNA polymerase in bacteria. Rifampicin is an efficient liver enzyme inducer that promotes hepatic cytochrome 450 enzyme upregulation. Rifampicin's most common side effects are jaundice, elevated liver function tests (14%), GI problems (1-2%), pruritic rash (1-5%). Thrombosis is a rare adverse effect of rifampicin.⁴

The link between DVT and Tuberculosis may be defined based on their pathophysiological process consists of an increase in plasma fibrinogen and factor VIII reactive thrombocytopenia, local compression of veins by enlarged reactive lymph nodes damage to the endothelium, and alteration in normal blood flow.

All the elements mentioned in tuberculosis cause hypercoagulability, which leads to thrombosis.⁵

Rifampicin was in relation with few cases reports to coagulation disorders, which leads to VTE. Rifampicin has an increased relative risk for DVT. The discontinuation of rifampicin was associated with regression of DVT, as reported by Sarkar et al. Rifampicin-related coagulopathy can develop at any time and in any place, from hours to months after initiating the drug.⁶

Because of the impact of rifampicin on cytochrome p450, a greater dose of warfarin is frequently required to attain normal therapeutic effect levels.⁷

CONCLUSION

Though venous thrombosis is a rare rifampicin adverse effect, the treating physician should exercise caution during the initial phase of treatment and anticoagulant medication should be started as soon as feasible to improve hemostatic problems.

Consent

The patient's written informed consent was obtained for the publication of the case report.

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Source of Support: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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