Major Vessel Venous Thrombosis in Patients of Posttubercular Chronic Constrictive Pericarditis Undergoing Pericardectomy: A Rare Scenario

Abstract
We are reporting two cases of neck and arm major venous thrombosis in patients of posttubercular chronic constrictive pericarditis posted for pericardectomy. There was unanticipated difficulty in placement of Internal Jugular vein catheter and subsequent ultrasound revealed thrombosis in the major veins. It was not diagnosed in the preoperative period. This report raises this major complication and highlights the use of ultrasound in such scenarios.

Keywords: Chronic constrictive pericarditis, internal jugular vein, pericardectomy, thrombosis

Introduction
Constrictive pericarditis is characterized by the encasement of the heart by a nonpliable pericardium.

Tuberculosis remains one of the common causes of chronic constrictive pericarditis in Indian population. Pericardiectomy is the only definitive treatment.

Thrombosis of neck veins in constrictive pericarditis is extremely rare, and to date, extremely few cases have been reported the reason for highlighting these cases was that these patients are at high risk of pulmonary thromboembolism, especially during manipulation and the importance of ultrasound-guided central venous catheter placement to prevent thromboembolic complications.

We report a case series of two cases of constrictive pericarditis complicated with major vessel venous thrombosis. The patient underwent a successful pericardectomy.

Case Reports

Case 1
A 27-year-old lorry driver presented with the complaints of cough, chest pain, dyspnea on moderate exertion, and easy fatigability. He was investigated and diagnosis of pulmonary kochs was established and was started on anti-tubercular treatment.

However, 1 month into his treatment, he developed generalized body edema, dyspnea on mild exertion, abdominal distension, and jaundice. Further workup revealed mild anemia, mildly deranged liver function tests, low voltage complexes, bilateral pleural effusions. Echocardiography showed pericardial thickening, minimal pericardial effusion dilated inferior vena cava, more than 25% variation in mitral valve inflow, all suggestive of constrictive pericarditis. Biochemical and pathological analysis of pleural fluid revealed it to be the tubercular origin.

The patient was planned for a pericardiectomy. In the operating room, routine anesthesia monitoring was attached and anesthesia administered according to the institutional protocol.

After endotracheal intubation, right internal jugular vein cannulation was attempted which resulted in negative needle aspiration repeatedly. Subsequently, ultrasound-guided right internal jugular cannulation was attempted. On imaging, it was found that right and left internal jugular veins were completely thrombosed [Figures 1 and 2] and had little flow [Figures 3 and 4] and the subclavian veins on both sides partly thrombosed, making them unsuitable for central venous cannulation. On examination of other major veins, femoral veins were found patent and central venous catheterization was performed through right femoral vein. Hepatic vein and inferior

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vena cava were dilated, both of them showing sluggish flow.

Case 2
A 44-year-old male had presented with productive cough, dyspnea, decreased appetite. He was diagnosed to have pulmonary tuberculosis and was started on anti-tubercular treatment. The diagnosis was later revised to MDR tuberculosis when the patient failed to respond to regular antitubercular medications. Two months into treatment, he developed swelling of right upper and lower limb and ascites. On further investigations, he was diagnosed to have chronic constrictive pericarditis and planned for pericardectomy.

As with the first case when internal jugular vein cannulation was attempted it resulted in negative needle aspiration. Subsequently, on ultrasound imaging, it was found that right internal jugular vein was completely thrombosed. Left internal jugular vein and bilateral subclavian veins were found to be patent, and venous cannulation was performed on the left side.

Discussion
Intracardiac thrombus secondary to constrictive pericarditis has been described. However, bilateral jugular vein thrombosis complicating chronic constrictive pericarditis remains a rare cause.

The normal pericardium is a double-layered sac that encases the heart and plays a role in ventricular filling. In the case of constrictive pericarditis, the pericardium becomes thickened and noncompliant. These pathologic changes to the pericardium cause the pressure in both ventricles to increase early in diastole, with an elevation of the end-diastolic pressure and reduction in the ventricular filling. The changes in normal heart physiology are the basis for increased central venous pressure.

Main causes of thrombi include hemostasis and endothelial injury. In constrictive pericarditis, impairment of filling of the ventricles during diastole causes hemostasis in the venous systems.

A Gogna et al.\textsuperscript{[1]} had reported deep vein thrombosis involving lower limbs, as an atypical case of tuberculosis.
Ozhan et al.\textsuperscript{[2]} reported a case of right atrial thrombi along with major venous thrombosis who had undergone successful pericardecomy.

Such patients are at risk of further complications such as the development of intracardiac thrombi, pulmonary embolism, incarceration of thrombus in tricuspid valve, and cardiac failure.\textsuperscript{[3]}

Katagiri and Tanabe\textsuperscript{[4]} reported the association of right atrial thrombus with chronic constrictive pericarditis which were successfully treated with pericardecomy and subsequent antitubercular treatment.

Early surgical thrombectomy together with standard pericardecomy is considered the procedure of choice in such cases.

This case series serves as a reminder that venous thrombosis may involve major vessels of the upper body in patients of constrictive pericarditis. This also highlights the importance of ultrasound-guided placement of central venous catheters and the complications that can be prevented by employing ultrasound guidance.

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Conflicts of interest
There are no conflicts of interest.

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