

Case Report

Diagnosis of pulmonary embolism by endobronchial ultrasound

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ABSTRACT

This is a case report of a young 20-year-old male who was referred for an endobronchial ultrasound (EBUS) procedure to investigate a fever and a left hilar lymph node and patchy pleural-based opacities seen on CT of the chest. During the EBUS procedure besides the left hilar node, a large thrombus was noticed in the main pulmonary artery and another one in the right pulmonary artery. EBUS proved invaluable in making a diagnosis in an unsuspected case of pulmonary embolism.

KEY WORDS: Convex probe, endobronchial ultrasound, pulmonary embolism

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INTRODUCTION

Endobronchial ultrasound (EBUS) is a well-established technique for visualizing structures around the major airways. Enlarged mediastinal nodes and masses can be seen and sampled with the help of an ultrasound probe at the tip of the bronchoscope. While looking for these lesions the major vessels in the chest namely the aorta, the main pulmonary artery and its branches, superior vena cava and azygous vein are also seen and can be confirmed with the help of a Color Doppler mode on the ultrasound processor. Naturally any abnormality within these vessels like a thrombus can also be clearly visualized. We report one such case where it was seen which is an incidental but an interesting finding.

CASE REPORT

A 21-year-old man had been running fever and cough with chest pain for a fortnight and was being treated at another hospital. Clinical examination was unremarkable and initial investigations showed a slightly raised total leucocyte count-11400/cmm and a normal X-ray Chest.

A contrast-enhanced CT scan of the chest showed patchy infiltrates in the lung periphery and left hilar lymphadenopathy [Figures 1 and 2]. He was referred to our unit for a bronchoscopy and EBUS evaluation of the left hilar lymph node. The bronchoscopy did not reveal any abnormality and we proceeded to the EBUS examination. During the routine initial examination of all the lymph nodal stations it was found that besides a left hilar node there was a large hyperechoic shadow occupying the lumen of the main pulmonary artery and another similar opacity though smaller shadow, in the right pulmonary artery [Figures 3 and 4]. The procedure was completed, by taking transbronchial needle aspirations from the left hilar node. It was assumed that the intravascular opacities were due to thrombi and this was immediately confirmed by performing a CT pulmonary angiography where filling defects were seen in the pulmonary artery and its branches [Figures 5-7].

The patient was put on anticoagulants and made an uneventful recovery. The aspiration from the lymph node showed only lymphoid cells and the bronchial washings did not reveal acid-fast bacilli or any other significant infection. Thus, the EBUS procedure was very helpful in making an important diagnosis, which was otherwise unsuspected.

DISCUSSION

Endobronchial ultrasound has become an invaluable tool in evaluating mediastinal lesions. Since the operator

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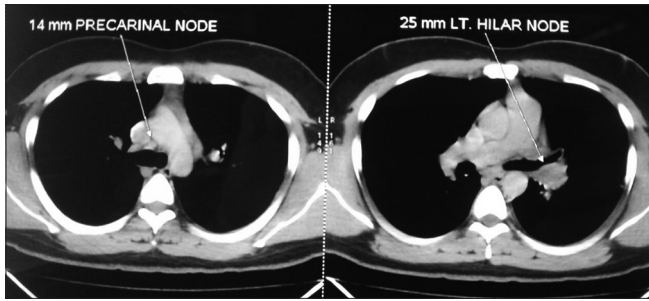


Figure 1: CT showing Precarinal and left hilar node

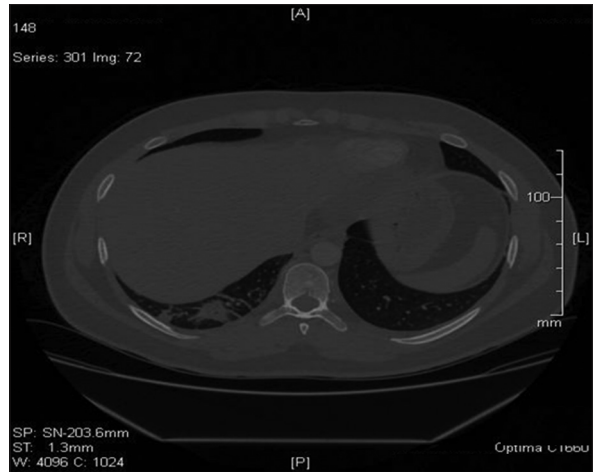


Figure 2: Patchy infiltrate in lung periphery

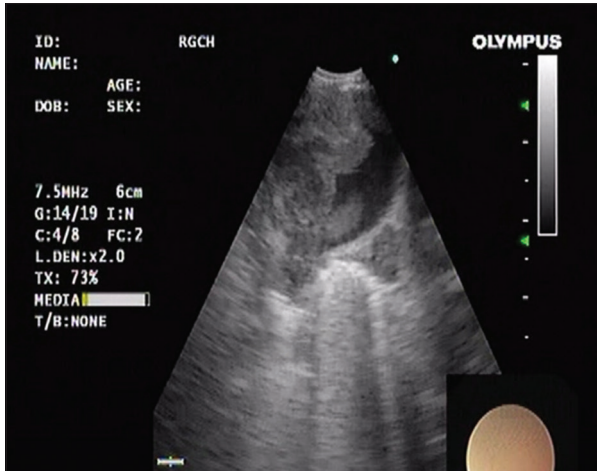


Figure 3: Ultrasound picture of thrombus in right pulmonary artery

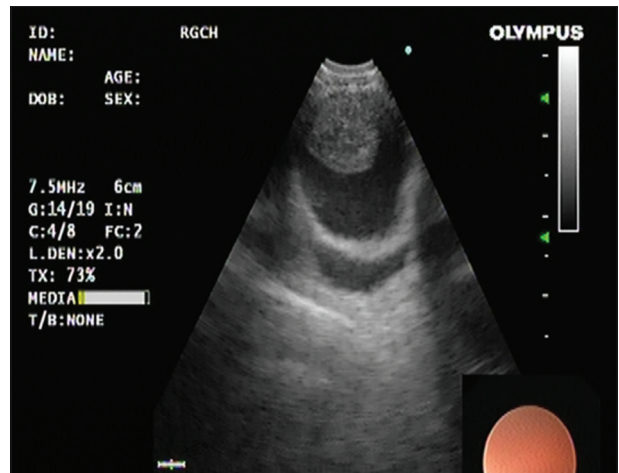
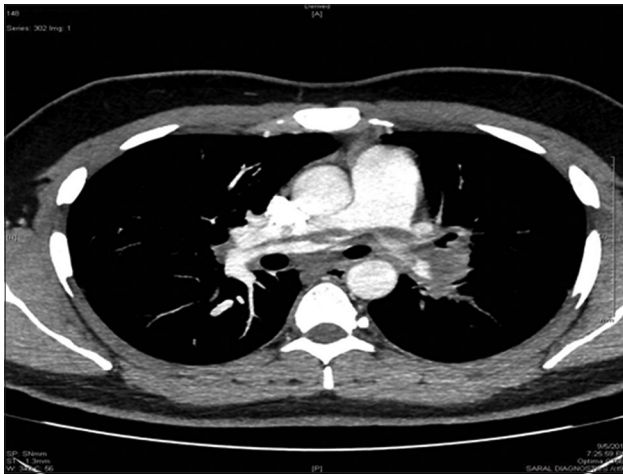


Figure 4: Thrombus in Left pulmonary artery



Figures 5: CT Pulmonary angiography (CTPA) with thrombus in main pulmonary artery



Figures 6: CTPA with thrombus in right pulmonary artery

also looks at all the major vessels, which are in close apposition to the central airways, any abnormality like an intraluminal thrombus is also likely to be seen during the EBUS scan. The presence of a Color Doppler mode helps in confirming the presence of a vessel. The diagnosis of pulmonary embolism by EBUS has been reported by several authors. In a pilot study Aumiller *et al.* reported the feasibility and safety of EBUS in detecting pulmonary emboli in the central pulmonary arteries. In

a series of 32 cases it was found to be equally accurate as CT pulmonary angiography, which is considered the gold standard for the diagnosis of pulmonary embolism. They concluded that in situations where CT pulmonary



Figures 7: CTPA with thrombus in left pulmonary artery

angiography was not possible due to contraindications to contrast agents, hemodynamic instability preventing transport, and radiation exposure, EBUS proved to be a feasible alternative.^[1]

Santaolalla *et al.* have reported a case where EBUS was able to detect a pulmonary thrombus not picked up on CT angiography.^[2] In another case report, Le Rouzic *et al.* have reported the incidental detection of a thrombus in the right pulmonary artery by EBUS, in a patient who was being investigated for lung cancer.^[3] Finally Casoni *et al.*

have reported a similar case as ours where a young male who was being investigated for fever and lung opacities was found on EBUS to have a definite intravascular thrombus.^[4]

We believe that our report, probably the first of its kind from the Indian subcontinent, again shows that the detection of pulmonary emboli in the central arteries is possible by EBUS. With more experience it may find regular usage in situations where conventional CT angiography is contraindicated or not possible.

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