A left hilar mass with an uncommon aetiology

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A 30-year-old lady presented with complaints of fever, haemoptysis, dyspnoea and chest pain for 1 week. Fever was low-grade and without chills. There was cough with scanty sputum and a single episode of 30 mL bright red haemoptysis. There was a history of multiple episodes of respiratory tract infections in childhood and dyspnoea relieved by oral medications.

The haematological profile revealed normal cell counts and preserved liver and kidney functions. A chest X-ray was requisitioned (Figure 1), which showed a well-defined left hilar opacity projecting over the left hemithorax. Cardiac size and the right lung field were within normal limits, with clear costophrenic angles. The differentials arrived on chest radiograph included an aortic aneurysm, dissection of the aorta, a posterior mediastinal mass or a consolidation.

The sputum reports for gram stain, pyogenic culture, acid fast bacilli, cartridge-based nucleic acid amplification test of *Mycobacterium tuberculosis* were negative. The patient was started on oral amoxicillin and given tranexamic acid. Fever and cough resolved in 7 days.

The chest CT, done on day 3 of presentation, is shown in Figures 2 and 3. It revealed a dilated pulmonary artery with aneurysmal dilatation of the left pulmonary artery. An irregular mural thrombus was seen in the aneurysm with a few internal calcifications indicating chronic PAH. A 2D-Echo revealed an atrial septal defect with pulmonary artery hypertension. Retrospectively, the chest radiograph was evaluated. If the hilum convergence sign was confidently applied for this X-ray, the final diagnosis could have been arrived by the X-ray itself [1].

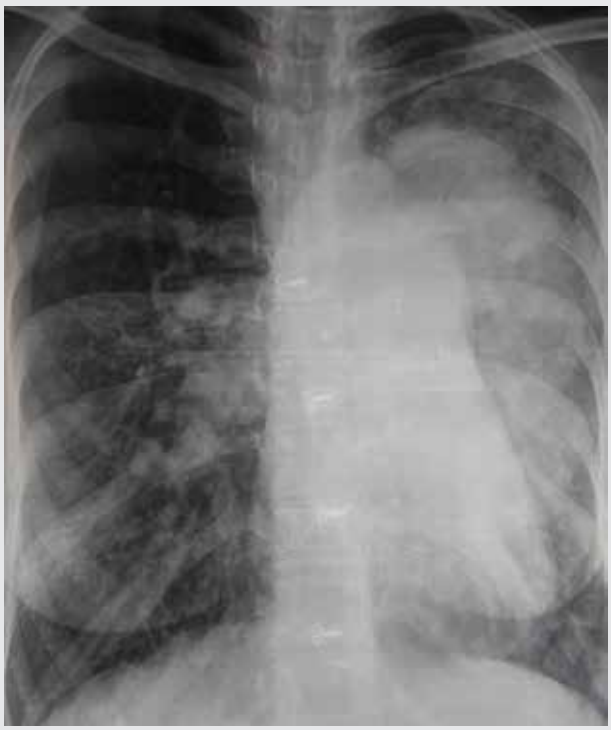

Figure 1. The chest X-ray revealing a well-defined opacity in left parahilar location which has a broad base towards the mediastinum. The opacity shows a positive hilar convergence sign. The margin of the arch of the aorta and left cardiac border is seen separately. The findings are suggestive of a lesion in the mediastinum arising in relation to the vascular structures

Discussion

The hilum overlay sign is said to be present when hilar vessels are visible 'through' a hilar mass. It confirms that the mass is in the anterior (more commonly) or posterior mediastinum. The X-ray of our patient had a left hilar mass with no hilar vessels visible separately. This confirms that the hilar opacity was arising from the hilar vessels or a lesion that was abutting the hilar vessels, for instance enlarged lymph nodes.

As per the hilum convergence sign, if the pulmonary vessels are seen converging towards the lateral margin of the opacity (as in our case), the pathology must arise from the pulmonary artery. On the other hand, if the vessel converges towards the heart and away from the opacity, then it would have been a mediastinal mass.

Essentially, the absence of the hilum overlay sign and the presence of the hilum convergence sign

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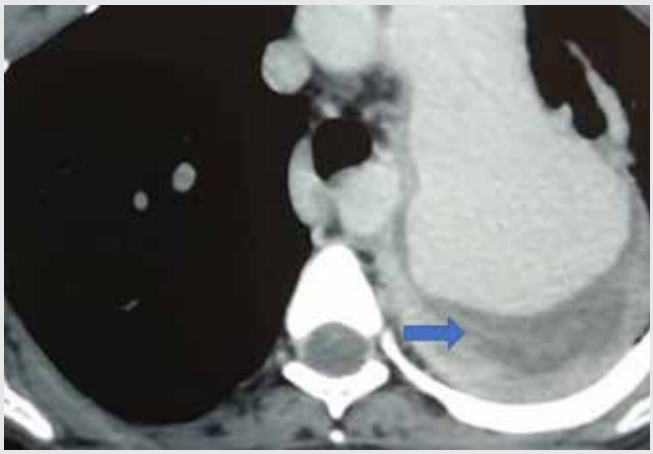

Figure 2. Contrast-enhanced CT axial scan revealing a large contrast-filled outpouching arising from the left pulmonary artery with eccentric hypodense area seen along the wall. There is atelectasis of the adjacent lung. The findings are suggestive of a large pulmonary artery aneurysm with eccentric thrombus (blue arrow)

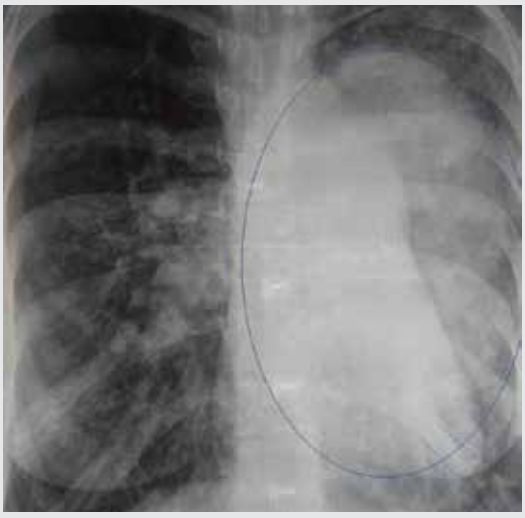

Figure 3. The chest X-ray marked with a blue circle to show the mass and blue lines to illustrate the left pulmonary artery converging towards the mass

could have confirmed the source of the opacity being the pulmonary artery on the radiograph itself (Figure 3). The advent of CT chest has blunted X-ray interpreting skills in the physicians. It is a learning message to all pulmonologists to keenly and systematically interpret chest radiographs. In some situations (remote areas, rural areas and in early part of work-up), it is the only available modality, and careful interpretation can help plan subsequent investigations appropriately.

Pulmonary artery aneurysms (PAA) are rare, often remain undetected and are potentially lethal in case of rupture, which can lead to intrapulmonary haemorrhage and asphyxia [2]. They often present with non-specific manifestations like haemoptysis, dyspnoea, chest pain, palpitations, or remain asymptomatic [3]. PAAs are either associated with congenital diseases like atrial septal defect, or may be acquired due to trauma, iatrogenic injury, vasculitis or infections. Congenital heart diseases are the most common congenital disorders associated with PAA. The left to right shunt diseases (including atrial septal defect as in our case) lead to altered flow dynamics and increased sheer stress on the wall [4, 5]. In non-urgent asymptomatic cases, conservative management can be attempted initially to treat the underlying aetiology. Surgical options include aneurysmorrhaphy, lobectomy and pneumonectomy; but carry high risk, specially in PAH. Hence, endovascular therapies are emerging as first-line definite therapy including coils, vascular plugs, and stent-assisted coils, and rarely even glue embolisation [4]. In view of lack of consensus treatment guidelines, all interventions must be weighed according to risk-benefit ratio. Thus, a high index of suspicion on chest X-ray followed by appropriate further evaluation can help in early diagnosis of PAA, thereby reducing morbidity and mortality.

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