RADIOLOGY

Pulmonary Varix
A Diagnostic Pitfall

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SUMMARY
Pulmonary varix is a rare lesion consisting of aneurysmal dilatation of a pulmonary vein. Its radiologic appearance may be indistinguishable from a neoplasm, granuloma, or pulmonary arteriovenous fistula. Pulmonary angiography with follow-up through the venous phase is the only method of diagnosis. Reported herein is an illustrative case.

Additional Indexing Words:
Coin lesion  Bronchogenic carcinoma  Pulmonary arteriovenous fistula
Mediastinal lymphadenopathy

A PULMONARY varix is a rare lesion consisting of aneurysmal dilatation of a pulmonary vein. A recent review of the literature has revealed only 29 reported cases.¹ The lesion is clinically significant in that its radiologic appearance may simulate a coin lesion, bronchogenic carcinoma, pulmonary arteriovenous fistula, and mediastinal lymphadenopathy. Inasmuch as suspicion of any of these latter lesions often leads to thoracotomy, it is important for physicians to be aware of the benign nature of a pulmonary varix and more importantly, the method of firmly establishing the diagnosis. Reported herein is the case of a young woman who underwent an incomplete diagnostic evaluation and a thoracotomy which may have been avoided because a pulmonary varix was not considered in the differential diagnosis.

Case Report
A 25-year-old female was found to have a "coin lesion" in the left mid lung field on a routine chest X-ray (fig. 1). The patient had been completely asymptomatic. She specifically denied cough, hemoptysis, sputum production, dyspnea on exertion, weight loss, fever, night sweats, or fatigue. She did not smoke and was unaware of contact with tuberculosis. Previous chest X-rays were unavailable. Physical examination revealed a well-nourished, well-developed female. Blood pressure was 110/70 and the pulse rate was 70. The skin, head, eyes, ears, nose, throat, and neck were normal. No adenopathy was present. The chest examination was normal. There was no neck vein distention and precordial examination was normal. The first heart sound was normal and the second heart sound was physiologically split with normal intensity of both components. A murmur was not heard over the precordium or chest. The abdomen as well as the remainder of the physical examination was normal.

Routine laboratory studies including complete blood count, urinalysis, and ECG were normal. Skin tests for tuberculosis, histoplasmosis, and coccidioidomycosis were negative. Sputum cytology was negative. Because of the suspicion of a pulmonary arteriovenous fistula, a pulmonary angiogram was performed. An injection of 50 cc of dye was made into the main pulmonary artery and films were taken every ½ sec for 4 sec. No lesions were seen (fig. 2). The right sided pressures and oxygen saturations were normal. The patient was then subjected to a diagnostic thoracotomy, but no lesion was found. The postoperative course was uneventful.

The patient was then referred to the Cardiology Service at Walter Reed General Hospital where, after review of the previous studies, another pulmonary angiogram was performed. Fifty cc of dye was injected into the main pulmonary artery and films were taken every ½ sec for 7 sec. The arterial phase again revealed no lesions but the levophase demonstrated the presence of a pulmonary varix at the same location where the "coin lesion" was seen on the chest X-ray (fig. 3). Right sided pressures and a hydrogen inhalation study with the sensing catheter tip in the pulmonary artery were normal.

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Pulmonary varices are presumed to be congenital in origin since most cases are reported in young, healthy individuals. However, there are five case reports of pulmonary varices in patients with valvular heart disease and suspected pulmonary venous hypertension, leading to the speculation that high pressure in the pulmonary veins may be causally related to dilatation and varix formation. In one case the varix was observed to shrink in size after prosthetic valve replacement.

The single most important factor in establishing the diagnosis of a pulmonary varix is an awareness of its existence. It may be suspected on the basis of a smooth rounded density on a chest X-ray, but may appear indistinguishable from other lesions that give a similar appearance, e.g., granulomas, neoplasms, adenopathy, and pulmonary arteriovenous fistula. Tomography may establish the vascular nature of the lesion by defining afferent and efferent limbs of the lesion but doesn’t distinguish between a varix and an arteriovenous fistula. At fluoroscopy both the fistula and the varix may expand with exaggerated inspiratory effort and shrink with forced expiratory effort.

The diagnosis of a pulmonary varix can only be established with a pulmonary angiogram. Since the lesion is located in the pulmonary venous system it is essential that the levophase be observed. Failure of the first pulmonary angiogram to be carried out to the levophase in our patient resulted in failure to make the diagnosis and a thoracotomy which may have been avoided.

The natural history of a pulmonary varix is generally regarded as benign. The presence of the lesion is not responsible for symptomatology. Two circumstances, however, may interrupt the otherwise asymptomatic course. One is rupture of the varix. Three cases of spontaneous rupture into the pleural cavity or bronchial tree have been reported, each resulting in death. The other is a thoracotomy, because of an undiagnosed coin lesion.

Because of the usually benign course of this lesion, surgical excision is not indicated. It would seem prudent, however, to follow such patients with serial chest X-rays and to consider operative intervention if expansion of the lesion is evident. Also, reassessment of the patient for cardiac lesions that result in pulmonary venous hypertension is indicated.

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Pulmonary Varix: A Diagnostic Pitfall
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