Incidental Finding of Pulmonary Azygos Lobe

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Abstract

A middle aged male presented with dyspnea post-surgery for a benign brain tumour and was referred to the radiology department for Computerized Tomography Pulmonary angiography on account of suspected pulmonary embolism.

The Computerized Tomography Pulmonary angiogram (CTPA) showed filling defects in the RT and LT main pulmonary arteries, their segmental and subsegmental arteries confirming the pulmonary embolism. Incidentally visualized is an azygos vein which was displaced laterally with resultant creation of a deep pleural fissure in the apical segment of the right upper lobe creating an Azygos lobe? An Azygos lobe is a normal anatomic variant of the right upper lobe due to invagination of the azygos vein and pleura during embryological development in the fetus. It is not a true accessory lobe as it does not have its own bronchus and it can be mistaken for a bulla, abscess, pulmonary nodule or a lung mass. Radiologists need to have knowledge of this anatomical variant, document it in their reports and not describe it as pathology. This knowledge is also useful for thoracic surgeons and respiratory care physicians when they are performing thoracoscopic procedures for sympathectomy or doing a thoracic surgery.

Keywords: Azygos lobe; Azygos fissure; Lung; Computerized Tomography Pulmonary Angiogram

Introduction

An azygos lobe is an unusual but important anatomical variant of the right lung anatomy [1,2]. Heinrich Wrisberg first recognized it during a postmortem exam in 1877 and it was first described on the chest radiograph in 1923 [1,3]. Azygos lobe is formed when a displaced right posterior cardinal vein penetrates into the apex of the lung instead of normal migration over it during embryogenesis [4]. Its worldwide incidence ranges between 0.2%-1.2% with approximately 0.4% found on chest radiographs and 1% on anatomical dissection [5,6] It is more common in males than females and there is a predilection for family inheritance [7-9].

The azygos lobe can mimic various conditions such as bulla , abscess, pulmonary nodule, lung mass and even a case of primary adenocarcinoma arising from an azygos lobe has been reported. They are usually found incidentally during a pulmonary CT scan or chest radiography [10,11]. On a chest radiograph an azygos lobe is visualized as a parenchymal defect in the upper lobe by an azygos fissure which runs convex to the mediastinum and traverses the apex of the right lung which is triangular in shape at its upper portion (trigonum parietale)[1,4]. Here, we report a case of azygos lobe, diagnosed incidentally on a CTPA in a middle aged male with suspected pulmonary embolism.

Case Report

A middle aged male presented to the neurosurgical clinic with sudden collapse at home. Exactly 40 days prior to this he had undergone brain surgery for a benign brain tumour and had been on pharmacological therapy (enoxaparin) in addition to mechanical measures for Deep vein thrombosis prophylaxis since post-op day 3. On admission to hospital about an hour later, he had regained consciousness and his vital signs were as follows: BP 105/76 mmHg, Pulse 120/min and SpO2 92%, RR 36/minute.

Clinical examination was significant for tachypnea, tachycardia and oxygen saturation in the low 90’s even on supplemental oxygen.

Pulmonary Embolism was suspected and after he was stabilised he was brought to the radiology department for CT pulmonary angiography.
The images of the CT pulmonary angiogram showed multiple filling defects in the RT and LT main Pulmonary arteries, their segmental and subsegmental arteries which was consistent with pulmonary embolism (Figure 1).

We also found incidentally an azygos vein which was displaced laterally with resultant creation of a deep pleural fissure (azygos fissure) in the apical segment of the right upper lobe creating an Azygos lobe and draining into the superior vena cava (SVC) (Figures 2-4).

He was treated and later discharged by the neurosurgical unit and he is doing well.

**Discussion**

This case report describes a rare but an important anatomic variant of the right lung, found incidentally on a CTPA in a middle aged male who presented with pulmonary embolism.

An azygos lobe is an unusual but important anatomical variant of the right lung anatomy [1,2]. Heinrich Wrisberg first recognized it during a postmortem exam in 1877 and it was first described on the chest radiograph in 1923 [1,3]. Azygos lobe is formed when a displaced right posterior cardinal vein penetrates into the apex of the lung instead of normal migration over it during embryogenesis [4]. The incidence worldwide ranges between 0.2%-1.2% with approximately 0.4% found on chest radiographs and 1% on anatomical dissection [5,6]. It is more common in males than females and there is a predilection for family inheritance [7-9]. Our patient is a male however there is no known family history of an azygos lobe.
The azygos lobe can mimic various conditions such as bulla, abscess, pulmonary nodule, lung mass and even a case of primary adenocarcinoma arising from an azygos lobe has been reported. They are usually found incidentally during a pulmonary CT scan or chest radiography [10,11] as in this case. On a chest radiograph an azygos lobe is visualized as a parenchymal portion separated from the upper lobe by an azygos fissure which runs convex to the mediastinum and traverses the apex of the right lung which is triangular in shape at its upper portion (trigonum parietale)[1,4].

Azygos lobe is not a true accessory lobe because it is not an independent segment of the right lung [2,12]. It is considered a portion of the right upper lobe of the right lung as its arterial and bronchial supplies arise from the apical segment of the right upper lobe [6,13]. The left azygos lobe has been documented but this is extremely rare [14].

The azygos vein is normally formed by the union of the right subcostal vein and the right ascending lumbar vein at the level of the L1/L2 vertebrae. It passes through the diaphragmatic aortic hiatus into the thoracic cavity and ascends along the anterolateral surface of the thoracic vertebrae where it takes a curve at T4 and then joins the superior vena cava. On a Chest radiograph the azygos vein arch appears as a tear drop and is formed when the right posterior cardinal vein, which is one of the precursors of the azygos vein, penetrates the right lung and traverses the apex of the right lung which is triangular in shape at its upper portion [15].

A detailed understanding or knowledge of this anatomical variant is crucial as an azygos lobe might increase the risk of neurovascular injuries with resultant excessive blood loss or phrenic nerve injury and other complications during thoracoscopic procedures for sympathectomy or thoracic surgery [19,20] and radiologists also need to know this anatomic variant in order not to mistaken it for a pulmonary pathology.

Conclusion

Radiologists should be aware of this rare anatomic variant, look for it and note it in their reports as knowledge of this anatomical variant is important in order to prevent misdiagnosis and/or unnecessary interventions. In addition knowledge of the various lesions that might occur in the azygos lobe and the azygos fissure will cause early visualization and diagnosis on imaging. This knowledge is also useful for thoracic surgeons and respiratory care physicians when they are performing thoracoscopic procedures for sympathectomy or thoracic surgery.

Conflicts of Interest

The authors wish to state that there is no conflict of interest.

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References


