

Lobes of Wrisberg –A Case Report with Clinical Correlations

Sajan Skaria*

Abstract

Background: Knowledge of anatomical variations is required for the proper diagnostic and surgical purposes. Variations in the number of lobes, fissures and pattern of division of lobes are common in lungs. In some cases fissures may be incomplete or absent. This article is a case report of unusual lobe in the right lung. The accessory lobe was named as Wrisberg's lobe, who describes the lobe firstly. Stoloff in 1929 published a report of 5 cases. The shadow found in chest X-rays in early ages raises the question of extra lobe. Although the azygos lobe is a rare anomaly its radiological appearance has been well defined. Presence of extra lobe of lung would not be always detectable in radiological appearance. An azygos lobe may be confused with a pathological air space such as a bulla or abscess [1,2]. In addition, the abnormally located azygos vein may be mistaken for a pulmonary nodule, while a consolidated azygos lobe may be confused with a mass.

The detection of this anomaly and its interpretation of its anatomical features are interesting not only to anatomists but also helpful to pathologists and surgeons. The size and shape of the lobe varies considerably. This study aims to review some literatures about the accessory lobe and the clinical conditions which may cause.

Present variation was found in a routine dissection in the department of anatomy. The anomalous lung was removed and studied. The embryological and clinical aspect of the case was discussed.

Variations of lung anatomy are important for both the diagnosis and treatment of various diseases involving all the domains of medicine. The lobe, may however, be the seat of pathology localized in the lobe itself and subject to the same influences as other purely lobar conditions. The azygos fissure may be the site of pleurisy or exudates.

Key words: Azygos Lobe; Azygos Fissure; Right Lung.

Introduction

Anatomical variations of lungs including number, fissures, and lobes are important for clinicians. Hayashi et al. in 2001 concluded that the knowledge of the anatomy and normal variants of the major fissures is essential for recognizing their variable imaging appearances as well as related abnormalities. The right azygos lobe is a well recognized entity seen in about 0.4 percentages of

chest roentgenograms and 1% of anatomical specimens. [2]. Azygos lobe is a result of unusual course of azygos vein. Hayashi et al stressed the knowledge of anatomy of lung along with variations is essential for recognizing various images of related abnormalities [3]. The existence of this unusual lobe was suspected early by some radiologists after noting unusual linear curved shadow in the upper right lung extending from the apex to the mediastinum not far from the level of second costal cartilage. In 1778 Wrisberg described the suspected linear shadow as an accessory lobe resulted in the unusual course of azygos vein and he called the accessory lobe as 'azygos lobe'. The azygos lobe itself is apportion of the upper lobe cut off by the persistence of the fetal position of the azygos vein, which in fetal life lies lateral to the spine. The vein therefore traverses the substance of the upper lobe, lying in an infolding of the parietal pleura. [3]

Author's Affiliation: Assistant professor, Department of Anatomy, Jodhpur medical College & Hospital, Jodhpur.

Corresponding Author: Sajan Skaria, Assistant professor, Department of Anatomy, Jodhpur medical College & Hospital, Jhanwar Road, Boranada, Jodhpur-342 003 Rajasthan, India.

E-mail: sajan.skaria@gmail.com

Case Report

In routine dissection in the department of Anatomy for under graduate it was observed an accessory lobe in the upper part of mediastinal surface of right lung. The lobe was tongue shaped .The azygos vein was

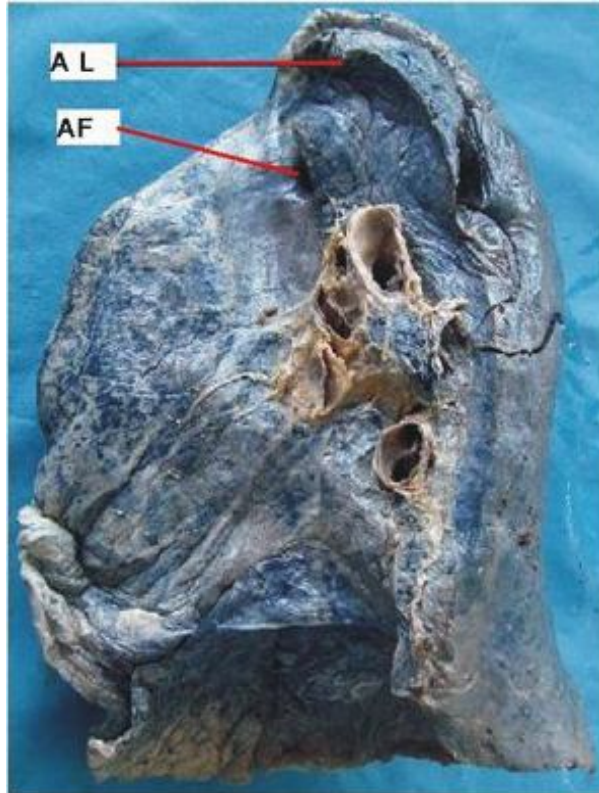


Fig. 1 Photograph showing mediastinal surface of right lung with azygos lobe.
AL-Azygos lobe, AF-azygos fissure

found to separate the extra lobe from the rest of the substance of lung. The fissure through which the azygos vein traverses is called as azygos fissure.

Discussion

Lungs are a pair of respiratory organs situated in the thoracic cavity. Each lung is conical in shape and has an apex, base, sharp anterior border, rounded posterior border and two surfaces namely- sternocostal and mediastinal. Each lung is divided into lobes by oblique and horizontal fissures. On right lung there are three such lobes and on left lung two. Numerous variations including number, fissures and lobes are already described.

Occasionally an extra fissure divides a lung or a fissure is absent. For example the left lung sometimes



Fig. 2 Photograph showing azygos lobe. (Blue colour)

has three lobes and a right only two .The most common accessory lobes is the azygos lobe which appears in the right lung in approximately 1 percent people. In these cases the azygos vein arches over the apex of the right lung, not over the right hilum, isolating the medial part of the apex as an azygos lobe [4].The accurate knowledge in the location of azygos lobe is essential for proper diagnostic and surgical procedures of the lung. It is also useful for the clinicians for accurate interpretation on different imaging techniques.

The present report describes the presence of an azygos lobe in the male cadaver. The anomaly was observed in routine dissection in the department of anatomy. In this case the mediastinal surface of the right lung presents a tongue shaped accessory lobe, which was separated from the rest of the lobe by azygos vein. The tongue shaped accessory lobe measures about 6 cm in lengths and 4.5 cm in width.

The anomaly is a result of unusual course of azygos vein. Normally the azygos vein proceeds up the posterior mediastinum on the anterior surfaces of vertebral bodies slightly to the right of the midline, passing over the intercostals arteries, with the thoracic aorta, and thoracic duct to the left. At the fourth or sometimes third, dorsal vertebra it bends forward and to the right bronchus and right pulmonary artery, and descends slightly to open into posterior surface of superior vena cava. Sometimes

the right posterior cardinal vein also invaginate the lungs with the azygos vein carrying pleural layers [5]. Piersol in 1864 [6] remarked that the azygos major vein may be displaced outwards so that, instead of curving over the root of lung, it may make a deep fissure in the upper part of the lung, making off an extra lobe.

In contrast to other accessory lobes, the azygos lobe does not correspond to a distinct anatomical bronchopulmonary segment (1,7). It forms during embryogenesis when the precursor of the azygos vein fails to migrate to its medial position in the mediastinum, where it normally arches over the origin of the right upper lobe bronchus (7,4,1)

There are many theories put forward to explain the occurrence of azygos lobe. Cleland in 1870 suggested that it was due to the development during fetal life of adhesion between the lung and the chest wall, thus preventing the vena azygos from following its normal course. [8]

But this view was questioned. The more widely accepted theory is that of Stibbe (1919) who believed that the immediate cause is an alteration in the relationship of developing lung to the developing azygos vein [8]

Suess suggested the hereditary basis of azygos lobe. Underwood and Tattersall made a special attempt to determine the role of heredity in the etiology of azygos lobe. They found the anomaly among two of four sibs in one family and in one of the three sibs in second family. But their data do not give information regarding the exact mode of inheritance.

The presence of azygos lobe may make it difficult or even impossible to use video-assisted thoracic sympathectomy if the surgeon is unprepared to deal with this anatomical anomaly [9]. Even though this anomaly is of no clinical significance, the knowledge

about this helps them from confusions with other more serious conditions. Previous knowledge of the presence of azygos lobes is useful so that the surgeons are not taken by surprise during operation.

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