Research Paper

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AZYGOS LOBE (Accessory lobe of the Azygos Vein/ Lobus Azygos Pulmonis Dextri)" a case report

Medical Science

KEYWORDS : Accessory lobe; Azygos lobe ; Azygos vein ; Lung ;

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ABSTRACT

The accessory lobe of the azygous vein was first described in the right lung by Wrisberg. A small accessory lobe sometimes found on the apex of the right lung; separated from the rest of the upper lobe by a deep groove lodging the azygos vein created when the laterally displaced azygos vein makes a deep fissure in the upper part of the lung during embryological development.

It is an incidental finding.appears in the right lung in about 1 percent of people. The azygos lobe forms when the azygos vein fails to migrate over the apex of the lung during fetal life.

The azygos lobe appears starting in a teardrop shape at around the level of T5 to the right of the midline as a pale line curving outward and upward and then back in to meet the root of the neck, the line is the infolding of the pleura.Abnormal fissures and lobes of the lungs are common and usually insignificant.

It develops when the apical bronchus grows superiorly medial to the arch of the azygos vein instead of lateral to it. As a result, the azygos vein comes to lie at the bottom of a deep fissure in the superior lobe of the right lung. Therefore, the azygos fissure contains four layers of pleura.

INTRODUCTION:

An azygous lobe or more accurately the "accessory lobe of azygous vein" is a small accessory lobe sometimes found on the apex of the right lung, separated from the rest of the upper lobe by a deep groove lodging the azygous vein.It was first described in the right lung by Wrisberg; documented in both right & left lungs but commoner in right lung (Shields).

This anomaly is seen in 1 percent anatomic dissections & approximately 0.4% in chest radiograms. This anomaly results from an alteration in the relationship of the developing lung to the developing azygous vein. In early fetal life the azygous vein lies on the apex of the right upper lobe lateral to the mediastinum. During development this vein shifts medial into the mediastinum. When the azygous vein fails to make this medial shift, it cuts into the growing right upper lobe which expands upward beyond the ectopic vein, leaving a deep pulmonary fissure containing the azygous vein in its lower end.Vein was originally extrapleural, but here the parietal as well as the visceral pleura is drawn into the fissure and covers both surfaces.

In roentgenogram, azygous fissure is visible because its thick pleural covering consists of four layers. Wrisberg lobe of the right lung may be seen in an X-ray was first proven by Bendick and Wessler. Azygous lobe appears as a thin line which starts at the upper border of the right lung, curves outwards, downwards and then inwards and terminates about the level of the second costal cartilage; described by many authors as being comma, horseshoe, pear, musical note, teardrop, olive shaped , spermatozoon or tadpole appearance.

CASE REPORT:

The present finding was noted in about 60 year old male cadaver which was donated to our institute for research purposes. An azygous its lobe was found during routine dissection.

In our case the azygos lobe and fissure observed are larger than that reported by Chiba et al. The lobe is 8 cm in length and the fissure is 6 cm deep whereas in the study by Chiba et al it was 5 cm in length with the fissure depth of about 2.2 cms.

In our case the course of azygos fissure showed a lateral convexity; also shown by Chiba et al. The right lung was 20 cm in length and length of lobe was 8 cms. The visceral pleura was demonstrated which participated in formation of meso-azygous from the lung to the azygous lobe. Except for the azygous lobe, we did not observe any other fissure and lobe variations in either lung.(fig 1 to 5)

DISCUSSION:

In human anatomy, an azygos lobe is a rare congenital variation of the upper lobe of the right lung. Embryologically, it arises from an anomalous lateral course of the azygous vein in a pleural septum within the upper lobe.

The azygos lobe forms when the azygos vein fails to migrate over the apex of the lung during foetal life. Instead it courses through the lung, dragging along with it the parietal and visceral pleurae. The four layers of pleura are then known as the 'azygous fissure', and the bit of lung tissue separated from the rest of the lung is known as the 'azygous lobe'. (Keith L Moore- The Developing Human 8th edn). The anatomical basis of azygous lobe is a partial separation of a portion of the apical segment of the right upper lobe by the azygous venous arch. (Skandalakis -The Embryologic and Anatomic Basis of Modern Surgery 270-271). There is failure of normal migration of the azygous vein from the chest wall to its usual position in the tracheobronchial angle so that the invaginated visceral and parietal pleural layers persist to form a fissure.

As the vein sinks into the substance of the lung it carries with it both visceral & parietal pleurae, and the septum is thus formed of four layers of pleura. It is recalled that a normal fissure in the lung consists of two layers of visceral pleura only. The vein itself appears to run in a tunnel at the bottom of the fissure which, communicates with the general pleural cavity. Azygous fissure (also referred as meso-azygous) always approaches the root of the lung and may even rest on the medial division of the eparterial bronchus. Its actual position varies considerably and it may cut the lung at any level from an oblique plane two inches below the apex, to a vertical plane close to the mediastinal surface where it arches forwards over the right bronchus and enters the SVC at the level of second right intercostal space. The pleura and the lung lie lateral to the vein, the root of the lung is below, and the trachea and right vagus lie medial to it. When the vein takes an aberrant course it lies much more laterally and runs behind the lung to reach the SVC. It now takes a much larger curve and cuts deeply into the right upper lobe, thus marking off an area of lung tissue of varying size. As the vein sinks into the substance of the lung it carries with it both visceral & parietal pleurae, and the septum is thus formed of four layers of pleura. It should be noted that a normal lung fissure consists of two layers of visceral pleura only. The vein itself run in a tunnel at the

bottom of the fissure which communicates with the general pleural cavity.Cleland (1870) suggested it was due to the development during foetal life of adhesions between the lung and the chest wall, thus preventing the vena azygos from following its normal course.

Radiologically the different positions of the fissure are:

(a) More or less horizontal, cutting the lateral surface of the lung at about one to two inches below the apex (type A)
(b) More nearly vertical, dividing the apex of the lung into approximately two equal parts (type B)
(c) Vertical, cutting off a small tongue-shaped lobe from the mediastinal surface (type C)

The presence of azygous lobe causes important morphological changes in the superior mediastinum:

- An anomalous right brachiocephalic vein (Mata et al 1990)
- Excessive anteriorization of SVC (Agrawal & Gandhi,1995)

Pomeranz & Proto(1986) suggested that azygous lobe was associated with congenital heart diseases (CHD) in 0.6-3% of cases.

Various clinical studies support the idea that various pathological conditions and associations of congenital anomalies may occur in or near the azygous lobe. So the precise anatomy of this anomaly needs to be defined by examination of cadavers.

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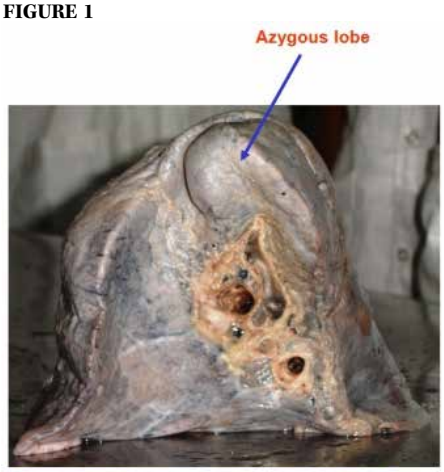
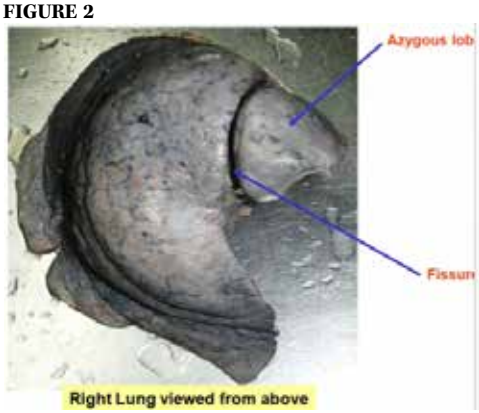
FIGURE 1



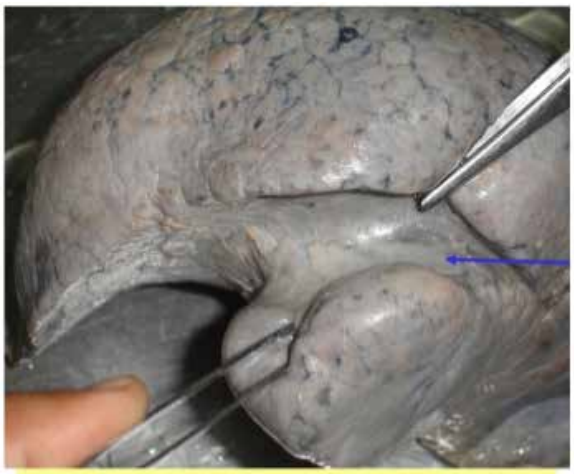
Right Lung viewed from medial aspect

FIGURE 2



Right Lung viewed from above

FIGURE 3



Lung showing significantly deep azygous fissure

FIGURE 4

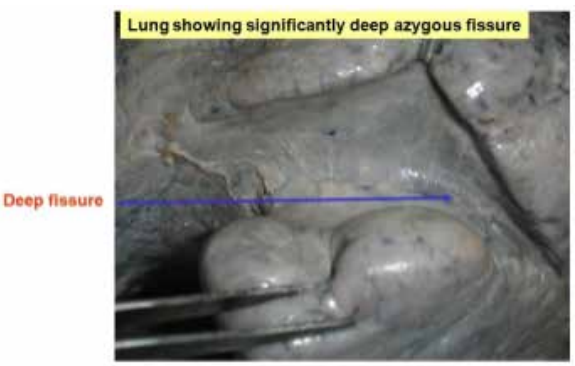
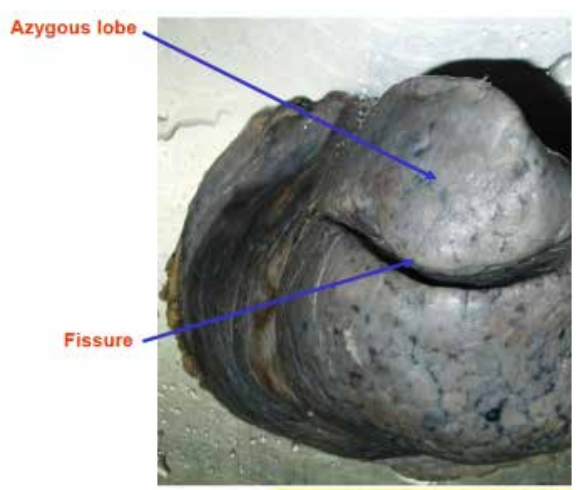


FIGURE 5



Right Lung viewed from abo

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REFERENCE

1. Agrawal, G., Gandhi, M., & Gandhi, S. (1995). Excessive anteriorisation of the superior vena cava associated with an azygos lobe. Surgical And Radiologic Anatomy, 17(2), 173-175. http://dx.doi.org/10.1007/bf01627580 2. Boyden, E. (1952). The Distribution of Bronchi in Gross Anomalies of the Right Upper Lobe, Particularly Lobes Subdivided by the Azygos Vein and Those Containing Pre-Eparterial Bronchi 1. Radiology, 58(6), 797-807. http://dx.doi.org/10.1148/58.6.797 3. Caceres, J., Mata, J., & Andreu, J. (1998). The azygos lobe: normal variants that may simulate disease. European Journal Of Radiology, 27(1), 15-20. http://dx.doi.org/10.1016/s0720-048x(97)00146-0 4. Pomeranz, S. (1986). Tubular shadow in the lung. Azygos lobe with azygos continuation of the inferior vena cava. CHEST Journal, 89(3), 447. http://dx.doi.org/10.1378/chest.89.3.447 5. Felson, B. (1989). The azygos lobe: Its variation in health and disease. Seminars In Roentgenology, 24(1), 56-66. http://dx.doi.org/10.1016/0037-198x(89)90054-0 6. Chiba, S., Suzuki, T., Takahashi, D., & Kasai, T. (1990). An Autopsy Case of Azygos Lobe and the Extra-pulmonary Course of the Bronchial Veins in Man. Okajimas Folia Anatomica Japonica, 66(6), 313-337. http://dx.doi.org/10.2535/ofaj1936.66.6_313 7. Satoh, K., Sato, A., Nagahara, Y., Kawase, Y., Kobayashi, T., Kojima, K., & Tanabe, M. (1994). Improved Method of Preparation of Inflated-Fixed Lung for Radiologic-Pathologic Correlation. Journal Of Thoracic Imaging, 9(2), 112-115. http://dx.doi.org/10.1097/00005382-199421000-00012 8. Malina, R. (1993). The developing human: Clinically oriented embryology (5th edition). xi + 493 pp. By Keith L. Moore and T.V.N. Persaud. Philadelphia: W. B. Saunders, 1993. $31.95 (paper). Am. J. Hum. Biol., 5(4), 507-507. http://dx.doi.org/10.1002/ajhb.1310050420 9. Skandalakis, J., & Ellis, H. (2000). Embryologic and Anatomic Basis Of Esophageal Surgery. Surgical Clinics of North America, 80(1), 85-155. http://dx.doi.org/10.1016/s0039-6109(05)70399-6 10. Smith, P. (1992). General thoracic surgery. 3rd ed. T. W. Shields (ed.). 225 × 285 mm. Pp. 1251. Illustrated. 1989. Philadelphia: Lea and Febiger. £105. British Journal Of Surgery, 79(7), 720-720. http://dx.doi.org/10.1002/bjs.1800790769