



Research Article**Right Lung Azygos Lobe and Related Literature****Yan-Ling Kong^{*,✉}, Qiao-Lu Yan^{*}, Lian-Fu He^{*}**

The First Affiliated Hospital of Dali University, Dali, Yunnan 671000, China.

*** These authors contributed equally.****✉ Correspondence**Yan-Ling Kong, Department of The First Affiliated Hospital of Dali University, Dali, Yunnan 671000, China. Email: 2268395892@qq.com. Telephone number: 18313009184.**Received:** December 15, 2019; **Accepted:** March 29, 2020; **Published online:** June 7, 2020.**Cite this paper:** Yanling Kong, Qiaolu Yan, Lianfu He. (2020) Right Lung Azygos Lobe and Related Literature.*Global Journal of Life Sciences*, 1(1): 20-23. <http://naturescholars.com/gjls.010104>. <https://doi.org/00.0000/gjls.010104>.**Copyright** © 2020 by Scholars Publishing, LLC.

Abstract

The lung azygos lobe is a rare type of anatomical variation of the lung, with a very low incidence. It is mainly caused by the abnormal development of blood vessels during the embryonic period. The formation of the lung azygos lobe generally does not cause clinical symptoms, which is usually found by accident during physical examination or by chest film or CT examination due to other lesions. In this paper, a case of lung azygos lobe with chest pain as its clinical manifestation was analyzed retrospectively, and the formation mechanism, clinical characteristics, imaging manifestations and clinical significance of lung azygos lobe were summarized in order to improve people's awareness of the lung azygos lobe.

Key words: Chest Pain; Odd Vein Split.

Case data**Introduction**

Lung azygos lobe is a normal anatomic variation of the lung. It contains four layers of pleura, most of which occur in the upper right lobe of the lung. It generally does not cause clinical symptoms. It is often found by accident. It has characteristic imaging manifestations and does not need special treatment when there is no symptom. Its clinical significance is widely discussed.

A 16-year-old female presented with chest pain for 2 weeks, without fever, cough, expectoration, nasal discharge, chest tightness, wheezing, shortness of breath, cyanosis, dyspnea, or abdominal distention. Physical examination showed no obvious abnormality, body temperature is 36.5°C, heart rate is 75 times/min, breath is 18 times/min, blood pressure is 120/75 mmhg, blood oxygen saturation is 98%, clear breath sound in both lungs, dry and wet rales were not heard. The chest X-ray film (Fig. 1) of the local hospital

showed that the right pulmonary apex showed a cord-like density increase inward and downward toward the hilum, and the lateral zone of the lesion was smooth. This image suggested the possibility of pulmonary strangulation. The electrocardiogram in our hospital showed normal ECG. To make a definite diagnosis, CT angiography of the thoracic vessels was performed. Transverse diaphragmatic window is shown (Fig. 2): A slightly protruding arc was seen in the upper lobe of the right lung. Move

anteriorly, outward, backward and downward, and along the right side of the thoracic vertebrae. Normal lung tissue was seen in the upper lobe along the right side of the thoracic vertebral body. Coronal diaphragm window showed (Fig. 3): The upper right lung is slightly arc-shaped. The above imaging examination can identify the diagnosis of pulmonary azygos lobe. No obvious abnormality was found in pulmonary function test and color Doppler echocardiography.

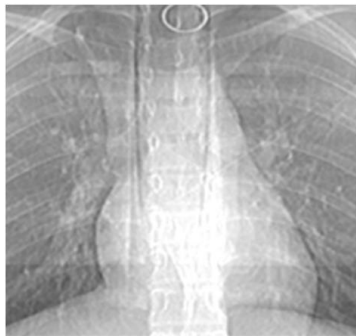


Figure.1



Figure.2

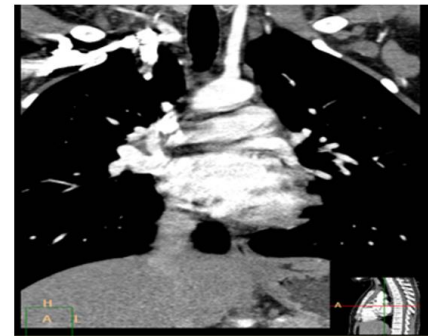


Figure.3

Discussion

Pulmonary azygos lobe is a rare type of pulmonary anatomic variation. The incidence rate is about 0.4%-1% (1). Odd lobes of the lungs were first reported by Wrisberg in 1788 (2). Odd lobes were formed mainly during the development of fetal blood vessels, and the azygos veins did not move to the median. Therefore, the position of the azygos vein arch was very low. The right pulmonary apex was compressed downward, causing the right pulmonary apex to enter the right upper lung, and the pulmonary tissue developed along the azygos vein. The vein compresses the pleura to form a downward wrinkle crack that is odd crack, odd crack breaks pulmonary apex downward segregated into odd lobes. Because the azygos vein is located outside the parietal pleura, it consists of two layers of parietal pleura and two layers of visceral pleura. There are four layers of pleura. Odd leaves occur mostly in the right lung upper lobe mediastinum, occasionally left

lung odd leaf formation (3). Odd lobes are a normal variant of the right upper lung with an extra lobe. Odd lobes are well-structured and functionally normal, but do not have an independent bronchus. Odd lobes are not independent segments of the lung. Odd lobes usually do not cause clinical symptoms, usually found by chance during physical examination or by chest X-ray or CT examination due to other lesions, but because of the abnormal anatomy of the pulmonary odd lobes, azygos veins compress the trachea, easy to cause pulmonary infection, therefore, cough, phlegm in patients with pulmonary odd lobes more. Typical azygos lobes can be diagnosed by chest X-ray examination. Generally, the azygos lobes can be seen on orthotopic chest X-ray as arc-shaped thin lines, starting at the medial end of the right pulmonary tip clavicle, traveling downward and inward from the pulmonary tip to the upper part of the hilum, ending at the root of the right lung, showing an

inverted comma shape. The vertical projection of the tangle shadow section of the azygos vein; domestic literature called this comma sign, some authors believe that comma sign is not rigorous, it should be called mirror comma sign is appropriate, because this inverted comma shadow and comma symbols arc top left and right opposite (4). X-ray films of alveolar wall, upward displacement of horizontal fissure, pleural adhesions, banded shadows formed by pleural depression, and pulmonary scars are easy to be misdiagnosed as pulmonary azygos lobe. However, the position of azygos vein in these lesions is normal, and the position of azygos vein is abnormal, CT can further confirm the diagnosis. The X-ray film is easily misdiagnosed as mediastinal mass when the azygos lobe is complicated with pneumonia. The typical CT manifestation of pulmonary azygos lobe is the change of azygos vein. The azygos vein goes up along the right side of thoracic vertebral body, and goes up and down from posterior medial to anterolateral to upper exterior. It enters superior vena cava or directly into right cephalobrachial vein at a higher position (5) (usually at the upper level of aortic arch). The azygos fissure usually takes the shape of "C" on CT. Clear, slightly convex, continuous multi-layers can show the "C" structure, the inside of which is normal air-filled lung tissue that is azygos lobe. Odd lobes of the lung have typical CT manifestations, CT examination of the disease has a higher diagnostic value, can be distinguished from other lesions. If necessary, fiberoptic bronchoscopy and pulmonary function tests can be further diagnosed. Odd lobes themselves do not cause clinical symptoms, but if the pulmonary odd lobes compress the bronchus supplying the odd lobes, it can cause atelectasis or bronchiectasis, or more prone to pneumonia than normal lung tissue. Symptomless treatment is unnecessary, and symptomatic treatment can be achieved when combined with other diseases.

At present, most of the patients who have azygos lobe reported in the literature have no abnormal pathological changes in both lungs and no significant clinical significance. However, the

clinical significance of these patients who have azygos lobe with abnormal pathological changes in both lungs has been widely discussed. Due to the presence of azygos vein, azygos lobe may be separated from the pathological process of other lung tissues (6), a study has reported. For example, the most common accumulation of pulmonary tuberculosis is the apex, and the azygos lobe is a kind of apex of lung, which separates the apex downward and forms, while the spread of tuberculosis to the azygos lobe is rarely found (6). At the same time, the presence of azygos lobe may limit the progress of pathological changes of azygos lobe itself. Denega et al. Reported that cancer in azygos lobe has no correlation with local lymph nodes (6). Darlong et al. Also confirmed this point, he reported a case of squamous cell carcinoma in azygos lobe with no mediastinal lymph node involvement (7). Fuyuanai et al. Also confirmed this point. They reported a patient with azygos lobe of the lung. There was an isolated nodule about 2cm long in the azygos lobe. The pathological examination confirmed that it was adenocarcinoma. The patient also had no regional lymph node metastasis (8). According to another report, spontaneous pneumothorax rarely occurs in the azygos lobe of the lung, and even plays a protective role to some extent (9). From the abstract and related studies, the lung azygos lobe generally does not cause clinical symptoms, At present, there are few reports about lung azygos lobe, most of which are unintentionally found during physical examination, and the patients themselves have no special clinical discomfort symptoms. In this case, the patient was hospitalized due to chest pain, physical examination and related laboratory examination does not consider other system diseases temporarily. In view of its particularity, relevant report is made to provide data support and practical basis for future research of the lung azygos lobe.

Declarations

1) Consent to publication

We declare that all authors agreed to publish the manuscript at this journal based on the signed Copyright Transfer Agreement, and followed publication ethics.

2) Ethical approval and consent to participants

Not applicable.

3) Disclosure of conflict of interests

We declare that no conflict of interest exists.

4) Funding

None

5) Availability of data and material

We declare that the data supporting the results reports in the article are available in the published article.

6) Authors' contribution

Authors contributed to this paper with the design (KYL, LFH), literature search (YLK), drafting (YLK), revision (KYL, QLY, LFH), editing (KYL, QLY, LFH) and final approval (LFH).

7) Authors' biography

None

References

1. Das S. Azygos lobe of the lung and its important clinical implications[J]. *Clinical Anatomy*, 2008, 21(8):846-846.
2. Sadikot R T, Cowen M E, Arnold A G. Spontaneous pneumothorax in a patient with an azygos lobe[J]. *Thorax*, 1997,52(6): 579-580.
3. Cui Zhitan, Yan Jiali. X-ray anatomy [M]. Beijing: Beijing Medical University Union Medical University Press, 1992.157.
4. Zhang Baoshi, Nanjing, Chen Sihui. One case of right pulmonary azygos lobe pneumonia [J]. *Journal of Medical Imaging*, 2018.02.288-293.
5. Kauffman P, Wolosker N, José Ribas Milanez de Campos, et al. Azygos Lobe: A Difficulty in Video-Assisted Thoracic Sympathectomy[J]. *Annals of Thoracic Surgery*, 2010, 89(6).
6. Denega, T., Alkul, S., Islam, E., et al. Recurrent hemoptysis - a complication associated with an azygos lobe[J]. *The Southwest Respiratory and Critical Care Chronicles*, 2015,3(11), 44-47.
7. Darlong L M, Ram D, Ashwani Sharm. The Azygos Lobe of the Lung: in the Case of Lung Cancer[J]. *Indian Journal of Surgical Oncology*, 2017, 8(2):195-197.
8. Shinichi F, Marissa M, Angelo R. Robot-assisted azygos lobectomy for adenocarcinoma arising in an azygos lobe[J]. *Interactive Cardiovascular & Thoracic Surgery*, 2013, 16:715-717.
9. Asai K, Urabe N, Takeichi H. Spontaneous pneumothorax and a coexistent azygos lobe[J]. *Japanese Journal of Thoracic & Cardiovascular Surgery*, 2005, 53(11): 604-606.