Case Study

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Anomalous Lobar Pattern Of Left Lung: A Case Report

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ABSTRACT

The left lung classically has one fissure , an oblique fissure; dividing the organ into separate upper and lower lobes which are connected only by lobar bronchi and vessels. The anomaly of the lobar pattern has been described by some research workers on radiographs and fewer studies on gross anatomical specimen. In this present case, an incidental finding in the gross dissecting lab; we report two fissures in the left lung dividing it into three lobes: a right pulmonary isomerism. Knowledge of this fissure variant is important for surgeons and radiologist and might be useful in interpreting unusual forms of atelectasis or consolidation occurring adjacent to the fissure.

Key words: pulmonary isomerism, lobar pattern, left lung.

A series of structural developmental abnormalities of the lung that results from an error in the embryologic development of the lung are known as congenital lung malformations. It can be a source for important morbidity and mortality in children. (David *et al,* 2006*)*. Congenital lung malformations represents 5-18%of all congenital anomalies, this range may an underestimate because of the high frequency of undetected or asymptomatic lesions.(Khalid kamai 1996)

The most common anomaly encountered is classified into 3 broad categories which are, broncho pulmonary (Lung bud) anomalies, vascular anomalies and combined lung and vascular anomalies. (Khalid kamai 1996)

The anatomical knowledge of the fissures and lobes of the lungs; which is a vital organ for respiration, is important for accurate interpretation of X-rays and CT scans, the left lung is distinctly divided into a superior and an inferior lobe by an oblique fissure, extending from the costal to the medial surface of the lungs both above and below the hilum (standring 2005). The superior lobe which lies anterosuperior to the oblique fissure includes the apex, anterior border, most of the costal and medial surfaces of the lungs, at the lower end of the cardiac notch a small process; the lingular is present. The larger inferior lobe lies behind and below the fissure, it comprises of almost all the part of the base of the lung, most of the costal surface and posterior border of the lungs (standring 2005).

Anomalous lobar pattern has been described by some research workers on CT scans, whereas there are fewer studies on gross anatomical specimen. Abnormalities of lobation though sometimes thought of as normal variants hence of little clinical significance may occasionally be associated with abnormalities of other organ systems e.g situs inversus, polysplenia and cardiac defects, with associated morbidity and mortality. (Claire Langston 2005) Unique among this are cases of pulmonary isomerism which is an anomaly in the asymmetry of the lung such that the lobes of one side have the morphology normally seen on the other side of the body. (Claire Langston 2005)

In the present case which was incidentally detected in a gross practical dissecting class, we report the presence of an accessory fissure on the left lung dividing it into 3 lobes. i.e. a case of right pulmonary isomerism. Anatomical knowledge of anomalous fissures and lobes of lungs are clinically important for identifying bronchopulmonary segments, it is also of utmost important for surgeons performing lobectomies, Radiologist interpreting X-rays and CT scans and also of academic interest to all medical personnel.

Case Description

During routine dissection of the thoracic region of a middle aged male cadaver, we encountered an anomalous left lung which displayed variation in pattern of fissures and lobes. Pulmonary vessels and branches of the bronchus remain intact. The specimen was photographed.

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Figure 1: Photograph of dissected left lung specimen; lateral view.

Figure 2: Photograph of dissected left lung specimen; medial view.

The left lung displayed an oblique fissure originating at a distance of 8.5cm from the apex on the medial surface and after traversing a distance of about 10cm, it further subdivides into a horizontal accessory fissure measuring about 11.5cm from the anterior border to join the oblique fissure, thereby giving an accessory lobe to the left lung. The oblique fissure continued downward as the conventional oblique fissure to intersect the inferior border.

DISCUSSION

Fissures are spaces separating individual broncho-pulmonary segments . they all get obliterated except along two planes representing the horizontal or oblique fissure. (*meenakshi et al.,2004) non obliteration* of any of the other spaces gives rise to accessory fissures of the lungs (*meenakshi et al.,2004)*. Defective pulmonary development may give rise to variation in lobes and fissures of the lung, occasionally fissural abnormalities may be acquired related to abnormal ventilator patterns during post neonatal lung growth and to bronchiolar obliteration occasionally seen in chronic neonatal lung disease particularly in immature infants. These fixed abnormalities of ventilation with atelectasis of lobules and overexpansion of adjacent lobules results in accessory fissure formation which has a prominent has been a prominent feature in long term survivors of bronchopulmonary dysplasia (Claire Langston 2005)

Abnormalities of bronchial origin and branching similar to those of extra lobation are usually incidental findings.

Accessory fissures may present in any of the five lobes.

Knowledge of an accessory fissure is helpful for clinicians in order to differentiate it from other normal anatomical and pathological structures. Interpretation of various radiograpghic appearances of the interlobar fluid is important for clinicians (modgul *et al, 2006*). In X-rays incomplete fissures fail to be detected on CT scans because of their incompleteness, thick sections and orientation in relation to particular planes (Ariyurek 2001).

In many lung diseases, segmental localization usually occur and the knowledge of accessory fissure is of much clinical importance to the clinician for example the knowledge of the presence of an accessory fissure may lead to changes in the plan and management strategy for pulmonary lobectomies and segmental resection. Post operatively an incomplete fissure can cause post operative air leakage. (Walker and craig 1997). Often this accessory fissure acts as a barrier to infection spread, creating a sharply marginated pneumonia which can wrongly

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be interpreted as atelectasis (Godwin and Tarver 1984). Incomplete fissures are also responsible for altering the spread of any lung disease.

Both types of pulmonary isomerism is often associated with cardiac defects and asplenia syndrome (if right sided pulmonary isomerism) or polysplenia (if left sided pulmonary isomerism). Neither of these associated abnormalities was found in the cadaver of this study.

The knowledge of anatomy of fissures of lung may help clarifying initially confusing radiographic findings like extension of fluid into an incomplete major fissure or spread of various diseases through different pathways (Dandy 1978). Considering the clinical importance of such anomalies, knowledge of its presence may raise the index of suspicion for the presence of its associated cardiac and splenic abnormalities hence enable quick intervention measures. A mastery of this fissure variant might be useful in interpreting unusual forms of atelectasis or consolidation occurring adjacent to the fissure.(Berkmen et al 1994)

REFERENCES

Ariyurek, O.M, Gilsun M, Demirkazik F.B.(2001) Accessory fissures of the lungs: evaluation by high-resolution computed tomography. Eur. Radiol., **11**:2449-53,

Berkmen Turgut, berkmen yahya. M., Austin john H.M.(1994). Accessory fissure of the upper lobe of the left lung. CT and plain film appearance AJR **162**;1287-1293

Claire langstons (2005) Pulmonary disorders in the neonates, infants and child in Thulberk's pathology of the lung (3rd ed) Andrew M.Churgs, Jeffrey L. Myers, Henry D. Tazelaw, Joanne L. Wright (eds). Thieme medical publishers, Inc pp120-125

Dandy, W.E. (1978). Incomplete pulmonary interlobar fissure sign. Radiology **128**: 21-5.

David VL, Radulescu A, Popoiu MC. (2006). Congenital lung malformations. jurnalui pediatruluc ix,vol .ix nv **35**-36

Godwin J.D and Tarver R.D.(1984.) . Accessory fissures of the lungs. A.J.R. **144**:39-47

Khalid kamai: (2011). congenital lung malformations in medscape Drugs, diseases and procedures in; http://emedicine.medscape.com/article/905596-overview#a03 assesed.

Meenakshi S, Manjunath K.Y, Balasubramanyam. V (2004). Morphological variations of the lung fissures and lobes. The Indian J. of chest Disease and Allied science. **46**: 179-82

Modgul V, Das S, Suri R. (2006). Anomalous lobar pattern of right lung: A case report. Int. J. Morphol., **24**(1):5-6,

Standring S. (2005). *Gray's Anatomy*. 39th ed. Churchill Livingstone, New York .pp.47

Walker W.S, Craig S.R(1997). A proposed anatomical classification of the pulmonary fissures. J.R. Coll. Surg. Edinburg., **42**: 233-4.

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