Available online www.jocpr.com

Journal of Chemical and Pharmaceutical Research, 2015, 7(9):224-226

Research Article

ISSN : 0975-7384
CODEN(USA) : JCPRC5

Incomplete oblique fissure and accessory fissure of left lung

Ishwar B. Bagoji[1], Megha A. Doshi[2], Gavishiddappa A. Hadimani[1], Balappa M. Bannur[1] and Shardhabai Rathod[1]

[1]BLDE University's Shri B M Patil Medical College, Hospital and Research Centre, Vijayapur
[2]Dept. of Anatomy Krishna Institute of Medical Sciences Deemed University, KIMS, Karad

---

ABSTRACT

The anatomical knowledge of the fissures and the lobes of the lungs are important for accurate interpretation on x-rays and CT scans. During routine dissection of thorax region for 1st year MBBS students, we found incomplete oblique fissure on the costal surface of the left lung, it coursed normally from the posterosuperior part of the hilum (Just above the gap between the pulmonary artery and left principle bronchus). It crossed the posterior border 4 cm below the apex. It then descends forwards across the costal surface and completed only 2/3 part of the costal surface. Further remaining 1/3 part of the fissure was incomplete up to the lower part of the hilum. On the base there was superficial accessory fissure which was measured 3 cm in length. Knowing the frequency of occurrence of a variant fissure in a particular population might help the radiologist clinicians and surgeons to make correct diagnosis to plan, execute and modify surgical procedures and this may reduce the morbidity and mortality rates associated with the lung surgeries.

Keywords: Lung, Lobes, Oblique fissure, Bronco pulmonary segments.

INTRODUCTION

The knowledge of anatomical variations of lobes of the lung is important for identifying broncho pulmonary segments in diseases of the lungs. Lungs are pair of respiratory organs situated in the thoracic skeleton. Each lung is approximately half conical in shape and presents an apex, base, three borders and two surfaces [1]. Lungs are divided into lobes by the oblique and the transverse (horizontal) fissures. Right lung is divided into three lobes by two fissures, oblique and horizontal. Left lung is divided into two lobes by oblique fissure, and is more vertical than the right. The oblique fissure cuts the vertebral border of both the lungs at the level of 4th or 5th thoracic spine. Traced downwards on the medial surface it ends above the hilum just above the gap between the pulmonary artery and left principle bronchus, traced downwards on the costal surface, it will be found to continue across the diaphragmatic surface (base) and turn upward on to the medial surface to end just below the lower end of the hilum (2). The presence of these two fissures in the normal lungs enhances uniform expansion, and their position could be used as reliable landmark in specifying lesions within the thorax, in general and within the lungs in particular [3]. In our study oblique fissure was incomplete on costal surface and accessory fissure was found on the base of the left lung. These fissures may vary in the degree of completeness and tend to divide the lobe into smaller subdivisions. In the region of incomplete fissures the adjacent lobes are connected by a sizeable chunk of pulmonary tissue as the cleft fails to reach the hilum. The fissure may be absent altogether. Accessory fissures when present at abnormal locations in the lungs give rise to abnormal lobes of the lung aerated by normal bronchus. These findings of accessory lobes are more common in infant.

Case report

During routine dissection classes of thorax for the undergraduate students in the department of Anatomy BLDE University's Shri B M Patil Medical College and Research Centre Vijayapur, a left lung was found displaying incomplete oblique fissure. It coursed normally from the posterosuperior part of the hilum (Just above the gap between the pulmonary artery and left principle bronchus). It crossed the posterior border 4 cm below the apex. It then descends forwards across the costal surface and completed only 2/3 part of the costal surface. Further remaining 1/3 part of the fissure was incomplete up to the lower part of the hilum. On the base it presented superficial accessory fissure which was measured 3 cm in length (Figure 1).

Figure A: Arrow mark showing incomplete oblique fissure on costal surface of the left lung.
Figure B: Arrow mark showing accessory fissure on the base of the left lung.

DISCUSSION

Absence of one of the fissures or presence of accessory fissures has earlier been reported by many authors. During developmental stage, at around 28 days of fertilization, the lung tissue grows as multiple bronchopulmonary buds. Later the fissures that separate individual bronchopulmonary buds/segments become obliterated. The spaces remain along the interlobar planes to give rise to major (oblique) and minor (horizontal) fissures in a fully developed lung.[4] Incompleteness or absence of a fissure could be due to obliteration of these fissures either completely or partially. Incomplete pulmonary fissures indicating partial fusion between lobes are common and more than half of the pulmonary fissures are incomplete. And accessory fissure could be the result of non-obliteration of spaces which normally are obliterated. Sometimes especially in infant, accessory fissures of varying depth can be seen in unusual locations of the lung, delimiting abnormal lobes which corresponding to the normal bronchopulmonary segments The transverse fissure and oblique fissure may vary in the degree of completeness and tend divide the lobe into smaller divisions.[2]. Aziz et al.[5] studied on 622 patients performed high-resolution CT scan (HRCT) from aortic arch to diaphragm and concluded that oblique fissures were seen facing laterally in their upper part in 100% of right

and 89% of left lungs. The right oblique fissure was incomplete in 48% of cases and the left oblique fissure was incomplete in 43% of cases. The accessory fissures as seen were azygos fissure, inferior accessory fissure, superior azygos fissure and left minor fissures in 1.2%, 8.6%, 4.6% and 8.1% of cases, respectively. Berkmen et al. [6] in their imaging study of 17 patients by CT scan and X-ray found 18 accessory fissures. In X-ray, incomplete fissure always give an atypical appearance of pleural effusion. Many a times the accessory fissure fails to be detected on CT scans, because of their incompleteness, thick sections and orientation in relation to a particular plane [7]

Knowledge of different types of accessory and incomplete fissures on the lungs is important because it may help in clarifying the confusing radiographic findings like extension of fluid into an incomplete major fissure or spread of various diseases through different pathways [8]. It may act as a barrier to spread of infection, creating a sharply marginated pneumonia which can wrongly be interpretated as atelectasis or consolidation [9]. Identification of completeness of the fissure is important prior to lobectomy, because individuals with incomplete fissures are more prone to develop postoperative air leaks and may require further procedures.

CONCLUSION

Anatomical knowledge of the fissures lobes and bronchopulmonary segment of the lungs are important to plan various surgical procedures to avoid post-operative complications like air leakage. It can also help to explain various radiological appearances of lobar anatomy of the lungs and the position of the interlobar fluid.

REFERENCES

[1] Standring S. (**2005**) Gray's Anatomy. 39th edn. Churchill Livingstone, New York. Pp. 945-949.
[2] Rosse C, Gaddum-Rosse P. Hollinshed's Textbook of Anatomy. Philadelphia; Lippincot-Raven. **1997**; 441–461.
[3] Kent EM, Blades B. *J Thoracic surg* (**1942**); 12:18-30.
[4] Larsen WJ. Human Embryology. New York: Churchill Livingstone; **1993**. p. 111-30.
[5] Aziz A, Ashizawa K, Nagaoki K, Hayashi K. . *J Thorac Imaging* **2004**;19: 186-91.
[6] Berkmen T, Berkmen YM, Austin JH. *Am J Roentgenol* **1994**;162:1287-93.
[7] Craig SR,Walker WS. . *J r cell.surg , edinb* (**1997**);42:233-234.
[8] Dandy WE. *Radiology*. **1978** Jul; 128(1):21-5.
[9] Godwin JD, Tarver RD: *Am J Roentgenol*. **1985** Jan; 144(1):39- 47