Case Report

Variations in the lobar pattern of right lung: A case report

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Abstract

The Anatomy of the lungs is frequently dealt by the clinicians, surgeons, radiologists, etc. The variations in the lobar pattern and bronchopulmonary segments of lungs assume great importance to these persons. The right lung is divided classically into three lobes, upper, middle and lower, by two fissures, oblique and transverse. Whereas the left lung is divided into two lobes upper and lower, by one fissure, horizontal. During development the lungs have many fissures and lobes but later on these fissures degenerate and usually two on right side and one on left side remain. Failure to degenerate completely or incompletely or over doing this may lead to variations in the number of lobes. We are presenting herewith, a case report of right lung with four lobes and a fifth incomplete lobe with accessory fissures seen in old aged male cadaver during routine dissection for I MBBS at Shadan Institute of Medical Sciences, Hyderabad. Fine dissection of this specimen was done. Photographs were taken.

Keywords: Acessory Lobes; Acessory Fissure; Four Lobes; Lobar Patern Variations; Right Lung Variations.

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INTRODUCTION

Anatomy: The right lung shows 2 fissures (oblique and horizontal) and 3 lobes (upper, middle and lower) while the left lung shows 1 fissure and 2 lobes. Variations are not uncommon in the fissures and lobes of lungs. **Development:** The lungs develop from endoderm of foregut and its splanchnopleuric mesoderm. The respiratory diverticulum (lung bud) appears as an outgrowth from the ventral wall of the foregut, bifurcates into two primary bronchial buds which divide into secondary bronchial buds and then into tertiary bronchial buds to form the bronchopulmonary segments. These segments, separated by small visceral folds expand to form lung. Initially they have many fissures and lobes but later on these fissures degenerate and usually two on right side and one on left side remain. Non-obliteration of these leads to accessory fissures and lobes while excessive obliteration leads to vice versa.[1,2.]

CASE REPORT

During routine dissection for 1st MBBS at Shadan Institute of Medical Sciences, Hyderabad, an old aged male cadaver showed variations in the fissures and lobes of right lung. It showed usual oblique fissure dividing it into two parts (upper and lower). The horizontal fissure which is usually present between the anterior border and oblique fissure was extending almost up to the posterior border. Thus, it was dividing not only the upper but also the lower lobe into two parts, i.e. four lobes. Apart from this, it was also showing very deep impression of the azygous vein creating incomplete azygous lobe. The inferior border in the anterior part was turned backwards creating a false lobe. Small pockets of lung tissue like diverticula were also seen as in some parts. The left lung was normal. The specimen was thoroughly observed and fine dissected. Photographs were taken from different angles as shown in following pictures.

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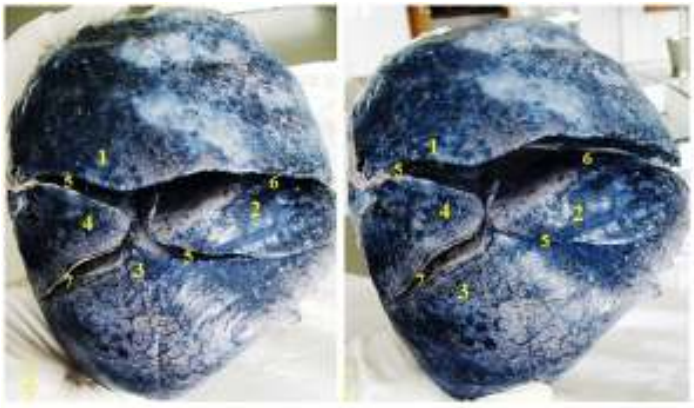

Figure 1: Right Lung (Lateral View)

Figure 2: Right Lung (Medial View)

Legend

Figure 1: Right Lung (Lateral View): 1. Upper lobe; 2.Middle lobe; 3. Lower lobe; 4. Accessory lobe; 5. Oblique fissure; 6. Transverse fissure; 7. Accessory fissure.

Figure 2: Right Lung (Medial View): 1. Deep Azygous fissure (creating incomplete azygous lobe above [AL]); 2. Transverse fissure; 3. Folded inferior border; 4. Small bag of pleura filled with tissue inside; 5. Unusual small part of lung.

DISCUSSIONS

E. Ghosh *et al.*[1] showed no accessory fissures in 82 lungs while less or incomplete lobes were present in many lungs. S. Behera[2] *et al.* stated two cases of right lungs with an accessory fissure separating the lower lobe into a superior and an inferior segment. Prakash *et al.*[3] observed one accessory lobe on the inferior aspect of 27.2% of the lungs studied, whereas supernumerary fissures were more common in right lower lobe, in 35% of lung specimens. Other variations were absent or incomplete fissures. Meenakshi *et al.*[4] stated accessory fissures in three left and one right lung in 30 pairs. Bhimai Devi *et al.*[5] found that 4 lungs (5%) exhibited accessory lobes and 14 lungs (18%) presented accessory fissures in 76 specimens. Varalakshmi KL[6] *et al.* observed accessory fissure in 6 (20%) right and 5 (14.7%) left lungs in the study of 64 lungs. Zareena SK[7] in study of 40 adult and 20 fetal lungs, mentioned accessory fissures or lobes only one on left side but none on right side, but other variations like less or incomplete fissures. Esomonu UG[8] *et al.* mentioned a variant complete fissure and three incomplete fissures in the right lung while the left lung presented with a variant transverse fissure. Mohanty SR[9] *et al.* presented a case of an abnormal lingual lobe of the right lung with abnormal pattern of oblique and horizontal fissures. Modgil *et al.*[10] observed the right lung with four lobes and an accessory fissure while the left lung was normal. Ronald A. Bergman[11] stated that an accessory inferior lobe may occur on either side or on both; it is larger and more frequently well-defined on the right, but more often present, or at least indicated, on the left. It was found in 47% of 210 lungs. The variations regarding less number of lobes and fissures or incomplete lobes and fissures are frequently reported in literature. But the variations regarding more number of lobes and fissures are rarely reported as mentioned here. These variations are important in various conditions like, differentiating between pleural and pulmonary infections; limited spread of infection in lungs initially; variable spread of fluid in pleural effusion. They are also important during planning of surgery for lungs; post-operative leakage of air; radiological interpretation. Pulmonologists and clinicians must also think of these during diagnosis of various conditions as unusual atelectasis or consolidation may also be seen. These are of academic and morphological value also.

CONCLUSIONS

In the present case, the right lung shows 4 complete lobes with and presence of accessory fissure. It also shows incomplete Azygous lobe. Unusual small parts of lung are also seen. More number of lobes and fissures are rare and less frequent than less numbers of lobes and fissures. These variations assume great importance in various fields of medicine. These should be borne in mind during various clinical, surgical, radiological etc. procedures and also during dissection. It is also important for morphological and academic interests.

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