



Research Paper

PRESENCE OF LOWER ACCESSORY LOBES IN THE LUNGS

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Pulmonary sequestration is a rare congenital malformation characterized by a mass of non-functioning lung tissue separated from the normal bronchopulmonary tree and vascularized by an aberrant systemic artery. While working on the fissures and lobes of the 60 lungs we observed the presence of lung tissue within the pulmonary ligament. These were pulmonary sequestrations or lower accessory lobes. This was observed in 6 specimens (10%) out of 60 lungs and all the 6 cases were on the left side. Clinically, the malformation remains generally silent as long as there is no secondary infection or communication with the bronchial tree or gastrointestinal tract. It can be diagnosed by aortography and MRI angiography. Accessory pulmonary tissue has a tendency to become cystic and is thus a source of congenital cysts of the lungs. The most significant complications were pleural empyema, haemothorax and haemopneumoperitoneum in case of extralobar sequestration. Resection of the involved lung segments lead to excellent results and is highly favorable.

Keywords: Lower accessory lobes, Sequestration of lung, Intra lobar, Extra lobar

INTRODUCTION

Pulmonary anomalies are variations in the lobation—aberrant lobes, accessory lobes and supernumerary lungs. The most important of these are the so-called lower accessory lung or Lobes of Rokitsky (1861). Debakey *et al.* (1950) and his co-workers defined the Lower accessory lobes “as a mass of non functioning lung tissue which is not connected with the normal bronchial tree”. In human medical literature, the same term

‘accessory lung or accessory lobe’ was renamed as “pulmonary sequestration”. Pryce’s (1946) traction theory is generally felt to be the most accurate explanation of this pathology. He and his group were the first to use the term sequestration. It represents between 0.15 and 6.45% of all pulmonary malformations. Two types of pulmonary sequestration are recognized, depending on whether or not the malformation possesses its own pleural covering. Intralobar

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sequestration is an abnormal region within the normal pulmonary parenchyma without its own pleural covering. Extra lobar sequestration corresponds to a true accessory lung, with its own pleural covering.

EMBRYOLOGY

In addition to the lung tissue formed from the ventral pharyngeal diverticulum which represents the normal lung bud, pulmonary tissue may be formed from any part of the primitive foregut, and at birth is usually found lying in the left lower region of the pleural cavity; to this condition the name of lower accessory lung or extralobar sequestration is given. Such tissue should be distinguished from the additional bud which may arise from the normally developed bronchial tree, and is commonly found as an accessory lobe attached to the right side of the trachea or right main bronchus. These accessory formations may or may not survive during development; they may or may not reveal their origin after birth by connections with the portion of foregut, trachea, or bronchus from which they are derived; and they may receive their blood supply from the normal pulmonary trunk, from an aberrant systemic supply, or from both sources. Some are consistently associated with other congenital intrathoracic defects, others never.

An alternative theory discussed by Boick (1950) depends upon the occurrence of accessory lung roots in addition to the primitive lung bud. Some of these, accessory formations atrophy through failure to acquire a blood supply; others acquire a systemic blood supply and survive.

MATERIALS AND METHODS

60 lung specimens were used to study the

presence of lower accessory lobes in the lungs and to trace the presence of any bronchus towards the lower accessory lobe by careful dissection.

OBSERVATIONS

Out of 60 lungs the lower accessory lobes were present in 6 lungs belonging to the left side. Out of 6 specimens the pulmonary sequestration was present towards the pulmonary ligament in 5 specimens belong to the extralobar pulmonary sequestration (ELS) (Figure 1) and in one specimen it was attached to the normal lung tissue constituting intralobar sequestration (ILS) (Figure 2) and was having a separate segmental bronchus as seen in x-ray (Figure 3) and by tracing the bronchial tree by dissection (Figure 4). In all the specimens the pulmonary sequestrations were related to the posteromedial segment of the lung.

Figure 1: Presence of Extralobar Sequestration in the Left Lung



Figure 2: Presence of Extralobar Sequestration in the Left Lung



Figure 4: Radiological Sppearance of Intralobar Sequestration



Figure 3: Presence of Intralobar Sequestration in the Left Lung



Figure 5: Intralobar Sequestration in the Left Lung Showing Bronchus Having Connection With Bronchial Tree



DISCUSSION

According to Debaquey *et al.* (1950) and his colleagues the pulmonary sequestrations were present in 4 lungs (10%) belonging to the left side out of 40 specimens. Valle and White (1947) collected 37 cases of lower accessory lung and 33 of these were left sided, and the incidence was 90%. In the present study out of 60 lungs 6 lungs (10%) showed the pulmonary sequestration belonging to the left side. According to Debaquey *et al.* (1950) the lower accessory lobes are not connected with the normal bronchial tree but Leathy and Mc Callum (1950) confirm the presence of bronchus towards the lower accessory lobes. In the present study in one lung specimen the lower accessory lobe had a bronchus of its own and in the remaining 5 no. bronchus was seen. Halkic *et al.* (1998) reported twenty-six cases of pulmonary sequestrations of which 19 of the cases (73%) were intra lobar and 7 cases (27%) were extralobar. In the present study out of six cases 5 cases (83.3%) were extralobar and one (16.7%) was intralobar.

According to Corbett and Humphrey (2004) the incidence of lower accessory lobes occur usually in the medial and posterior segments and on the left side (60%). Halkic *et al.* (1998) reported extralobar localization was basal in 71% and situated between the upper and the lower lobes in 29%. Savic *et al.* (1971) of the 133 extralobar sequestrations, 77.4% were located between diaphragm and lower lobe. In the present study incidence of lower accessory lobes occurred in the medial basal segment and on the left side (100%).

Extralobar sequestrations may be found in association with cardiac, or more frequently, diaphragmatic anomalies in 50% of cases. Cole

et al. (1951) discuss accessory lungs (extralobar sequestration), and diaphragmatic defects as related conditions but in the present study none of them had diaphragmatic defects.

CONCLUSION

Accessory pulmonary tissue has a tendency to become cystic and is thus a source of congenital cysts of the lungs. The intralobar sequestration is much less often associated with other anomalies (14%) than is the extralobar form (about 50%). The anomalies found in the extralobar form are usually more serious and often occur in combination. There is no specific pattern of symptoms for this condition. In many cases the symptoms that lead to further investigation are due to accompanying diseases or other anomalies. Extralobar masses are often clinically silent and only found by chance, generally during exploratory thoracotomy. Intralobar sequestrations are not associated with other cardio-pulmonary anomalies, but extralobar sequestrations may be found in association with cardiac, or more frequently, diaphragmatic anomalies. The most significant complications were pleural empyema, hemothorax and haemopneumoperitoneum in case of extralobar sequestration. If a bronchopulmonary sequestration is suspected bronchography and retrograde aortography are the essential examinations to confirm the diagnosis and to avoid intraoperative difficulties. Lobectomy was the most common treatment procedure and segmental resection was performed in some of the cases. Investigations are necessary in order to avoid unexpected pathology at the time of operation. Resection of the involved lung leads to excellent results.

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