

Pulmonary Sequestration

Second case series from Iraq

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Abstract:

Background: Pulmonary sequestration is a lung tissue (out of function), that received its blood supply from anomalous artery and not continuous with the tracheobronchial tree.

Objectives: To report a personal experience in dealing with five patients with pulmonary sequestration, due to anomalous arterial supply from the descending Thoracic Aorta, ways of diagnosis and proper surgical management.

Patients and Methods: Five patients with pulmonary sequestration, admitted, investigated and surgically managed at the department of Thoracic and Vascular surgery, in the surgical sub specialties hospital of the Medical City Teaching Complex during ten years period (2010-2019).

Results: Four of our patients were male, the remaining one was a female, all managed successfully by Operative ligation of the anomalous blood supply and resection of the involved segment or lobe.

Conclusion: Resection of the involved segment or lobe after ligation of the anomalous artery offers the best chance of cure.

Keywords: Sequestration, lobectomy, intra lobar, Anomalous artery, resection

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Introduction:

Pulmonary sequestration (PS) is nonfunctioning lung tissue that receive its blood supply from anomalous arteries and is lost its continuity with tracheobronchial tree.¹ May be intralobar sequestration (ILS) i.e. It is within a lung lobe and visceral pleura in common with it. or extralobar sequestration (ELS) a separate piece of lung parenchyma and has its own pleural envelope.² PS is a rare congenital lung abnormality and may go undiagnosed during prenatal period and early adulthood years.³ Intralobar sequestration account for 75% of PS, and occur within the lower lobe and more often in the left lung.³

Literature assessed the sensitivity and specificity of computed tomography (CT) in the diagnosis PS.⁴ Recurrent pneumonia of the affected lobe is the most common presentation of these patients, which occurs mostly in adolescence or early adulthood. Patient can be asymptomatic, and may discover incidentally or patients may have symptoms which include cough, hemoptysis, chest pain and dyspnoea.⁵

In Iraq, El Hassani⁶ reported the 1st series on PS during last century. This work was carried out to comment on 5 cases of PS and it is the second series from Baghdad .Iraq.

Case presentation:

1. Forty- five years old female presented with chronic cough with purulent sputum was not responding to medical treatment. Chest x ray showed opacity in the left lower lobe. CT examination revealed a cystic mass in the left lower lobe (Fig.1). Rigid bronchoscopy showed pus coming from left lower lobe orifice. Left thoracotomy was done, the anomalous blood supply was from the descending thoracic aorta, doubly ligated and divided, and a cyst was removed. Fig.2 showing the big anomalous artery. Histopathology was consisting with bronchopulmonary sequestration.

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Figure (1) CT showing a cystic mass located in the left lower posterior basal segment

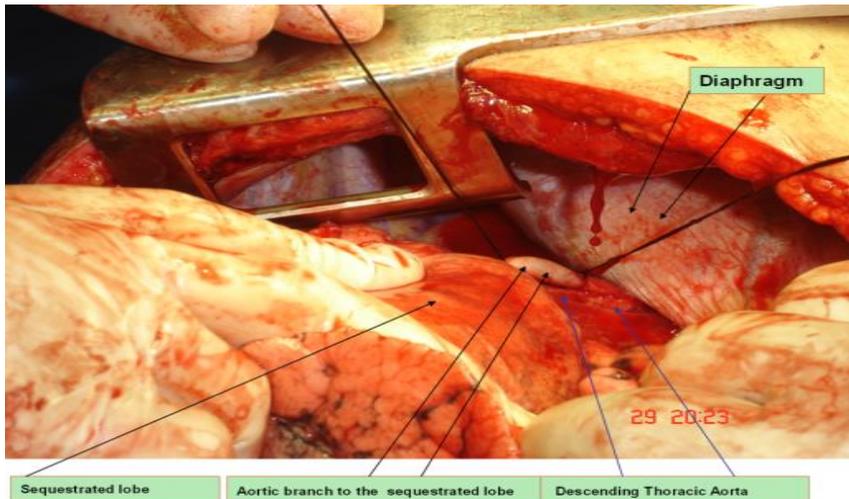


Figure. (2) Big anomalous artery

2. Twenty- four years old man from southern Iraq (Missan), presented with shortness of breath and recurrent chest infection for the last 4 years. CT with IV contrast and CT angiography revealed abnormal left lower lobe, posterior basal segments with multiple air containing thin wall cysts, and superior vessel arise from descending thoracic aorta. The picture suggestive of intralobar sequestration. Left thoracotomy was carried out, and a classical left lower lobectomy was done after securing the anomalous arterial supply.

3. The histopathological report confirm the diagnosis of intra-lobar sequestration.
 4. A 5-year old male from Baghdad district , presented with chest infection .He was chesty producing yellow sputum .His CXR showed air fluid level of the left lower lobe .CT chest showed a cystic lesion involving the medial basal segment of the left lower lobe raising the possibility of sequestration as shown in figure (3)



Figure (3) Medial basal segment of left lower lobe containing cystic lesion

Classical left thoracotomy approach .Adhesion released, the anomalous artery identified, doubly ligated and divided. Left lower lob resected in the classical way and the obtained histopathological report confirms the diagnosis of intra-lobar sequestration.

4- A 6-years old boy, diagnosed as lung abscess involving the right lower lobe. CT showed multilocular cystic mass above the right hemidiaaphragm raising the possibility of complicated hydatid cyst but an operative finding of anomalous arterial supply coming from below the right hemidiaaphragm so doubly ligated and divided .Right lower lobe containing large abscess removed and the histopathological report confirm the diagnosis of intra- lobar sequestration . 5-A 20-years old patient, diagnosed as lung abscess involving left lower lobe, the pre-operative diagnosis was this is may be a complicated ruptured hydatid cyst leading to an abscess, but per-operative finding of a pulsating artery coming from descending thoracic aorta to the left lower lobe, so exposed carefully, doubly ligated and divided and a classical left lower lobectomy done and sent for histopathology, which turned to be an intra-lobar sequestered lobe.

Discussion:

In Iraq, El Hassani 6 reported six cases of PS during 1974 to 1994. The age of patients was ranged 6 months to 50 years. Recently, 7 an 80 year old women with PS was reported. The age of cases in our report was from (5-years to 45-years). It is in the line with that reported literature.6,7 ILS is a rare but not uncommon congenital anomaly. The initial diagnosis may occur during adulthood. The pathogenesis of ILS is controversial. It was thought that ILS and ELS were having a shared embryogenic origin.8 currently; it is believed that ILS is an acquired disease due to bronchial obstruction, pneumonia, and pleuritis. It might be partially attributed to systemic arterial supply due to secondary angiogenic growth factors activated by recurrent infections. This would be the most plausible explanation for why ILS is found more frequently in adults.9 Cases in this report were with male predominance i.e. (Four male and one female) and this comparable to others studies .3, 4 the cases were presented to tertiary center, and it is not reflecting the actual sex distribution in Iraq. Comparable to other reports, 3, 4 in four of our patients it was the ILS was left-sided and receiving arterial blood supply from the descending thoracic aorta. Surgery in term of resection of the involved lobe or segment is the standard treatment for both symptomatic and asymptomatic patients with PS. All cases involved

in this study were treated with segmentectomy and lobectomy. Recently, interventional treatment has emerged as minimal invasive surgical alternative to lobectomy (Trans arterial embolization of ILS).10 Arteriography is the investigation of choice to identify abnormal systemic vessel feeding the abnormal portion of the lung. Recently, a less invasive means of identifying the anomalous artery have been suggested as e.g., contrast enhance multidetector-row computed tomography (MDCT) and contrast enhanced MRI ...etc. Iraq is struggling to provide such procedures. In conclusion, resection of ILS was safe using the available procedures. And it gave the best chance of cure

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