

Case Report

Branchial Cyst Presenting As Incidentally Detected Superior Mediastinal Mass: A Case Report

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Abstract: Among the branchial cysts, those arising from second arch, which appear in the mid neck are the most common. It is followed by cysts arising from the third and fourth arch, which appear in the lower neck, supraclavicular or suprasternal location.. But branchial cysts presenting as mediastinal mass is very rare. Here we present a case of branchial cyst that is incidentally detected as superior mediastinal mass.

Keywords: Branchial arches, Branchial cysts, mediastinal mass.

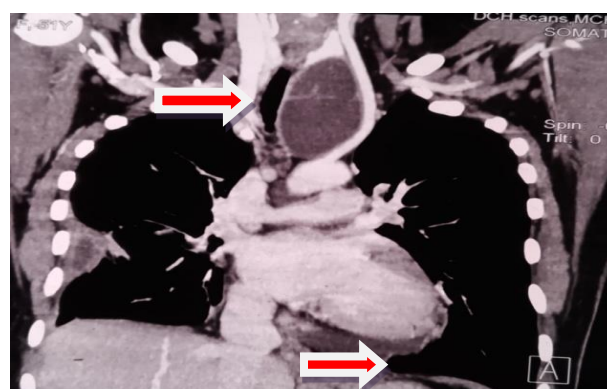
INTRODUCTION

The development of head and neck structures commence with the formation of branchial apparatus during the 4th week of gestation. There are 6 paired branchial arches. Each branchial arch consists of a core of mesenchyme covered externally by the ectoderm and internally by the endoderm. The 5th arch disappears and the 6th arch is rudimentary. Many congenital anomalies and cysts of the head and neck region are attributed to the aberrant development from these structures. Among these cysts those from the second branchial arch are the most common with a frequency of 90-95%. This is followed by cysts from the 3rd and 4th arch with a frequency of 2-8%. Those related to first arch appear in the preauricular area and those related to second arch appear anterior to the sternocleidomastoid muscle in the mid neck and those related to third and fourth arch appears in the lower neck, in the suprasternal/supraclavicular location.

Mediastinal location is very uncommon. The branchial anomalies can be sinuses, pouches or cysts. Branchial cysts presenting as a mediastinal mass is very uncommon. There are very few documented cases of the fourth branchial arch anomaly, especially that involving the mediastinum.

Case Report

A 51 year old female presented with fever and productive cough of 1 week duration. She was admitted in the general medicine department (Government medical college, Kottayam) and treated with a diagnosis of pneumonia. She was on antibiotics for 2 weeks following which she got relieved of her symptoms. As part of the investigations for the same, CT thorax was taken. CT scan revealed a superior mediastinal cystic mass with thin septations, which had a mass effect on trachea and esophagus along with atelectatic changes in the middle and lower lobe of the right lung.



CT Thorax showing a well-defined lesion of size 4.7x3.7x8.5cm in the superior mediastinum

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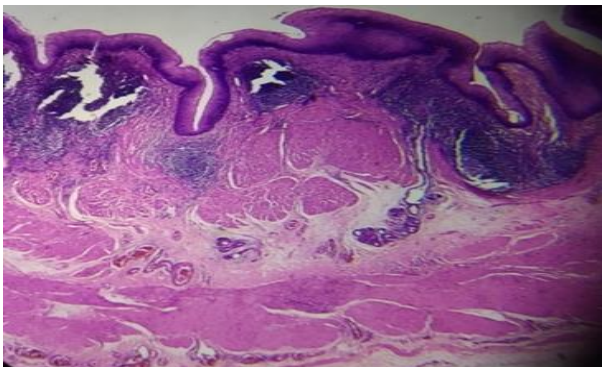
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A midsternal thoracotomy was carried out which revealed a cystic mass which was excised. It was weighing 50gm, measuring 5x2.5x1.5cm. Cutting through the mass extruded creamy material and showed a biloculated cyst separated by a thick fibrous septa. Inner wall was smooth with tiny whitish specks.

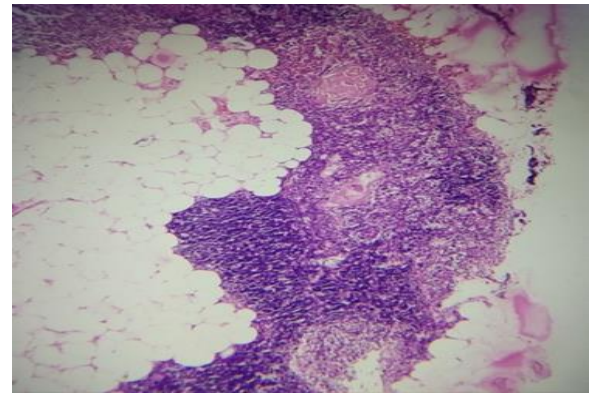


Biloculated cyst separated by thick fibrous septa

H&E stained paraffin sections showed thymic tissue and adjacent cyst lined by hyperkeratotic stratified squamous epithelium with fibromuscular wall containing lymphoid follicles. Areas of calcification and congested blood vessels also were seen in the wall of the cyst. A diagnosis of branchial cyst related to thymus possibly arising from 3rd or 4th branchial pouch was made. The patient is remaining healthy and free of symptoms after surgery.



H&E 100X: Section from cyst wall shows hyperkeratotic stratified squamous epithelium with a fibromuscular wall containing lymphoid follicles.



H&E 100X: Section shows adjacent thymic tissue

DISCUSSION

This report describes a fourth branchial cleft anomaly. Though branchial cleft anomalies are very common in the neck, its unusual presentation in the mediastinum causes a delay in the diagnosis.

Mediastinal cysts are relatively uncommon, accounting for 10 to 15% of radiologically detected masses at this site. Several tissue types can be seen in such lesions. Sometimes neoplasms that undergo cystic degeneration also may present as a mediastinal cyst.

Some mediastinal cysts may contain more than one of these constituents, relating to the fact that many intrathoracic cysts are congenital and also to the close proximity in which the embryonic foregut, pleuropericardial membranes and branchial pouches are formed during early morphogenesis.

Hence branchial cysts should be a differential diagnosis of mediastinal masses when all other possibilities are ruled out. During the surgery the cyst should be followed into the neck and excised completely. It is necessary to minimise the chance of recurrence, which is usually high following incision and drainage of third and fourth branchial cyst.

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