Case Report

Branchial cleft cyst in posterior triangle of neck: A rare presentation

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Abstract:

Branchial cleft cysts commonly presents as a solitary, painless mass in the neck of a child or young adults. They usually presentation is in the anterior triangle of the neck, mostly along the upper third. Although very rarely a branchial cyst can present in the posterior triangle of neck. In this article, we present a rare case of a 9-year-old female child with a right branchial cyst who presented with an asymptomatic, rapidly growing mass in the right posterior triangle of the neck extending from mid neck, C5 level superiorly and abutting the right supraspinatous muscle inferiorly. She underwent excision of the cystic mass and the follow up period was uneventful.

Keywords:

Branchial cleft cyst, Posterior Triangle of Neck

Introduction

Branchial cleft cysts are congenital epithelial cysts seen on the lateral part of the neck and they arise due to the failure of obliteration of the second branchial cleft in embryonic development.[1,2] But there are some theories which suggest that cystic degeneration of the first, second, and third branchial clefts or cystic degeneration of epithelial elements of cervical lymph nodes may be responsible for cyst formation.[3] Though most commonly they are found in the anterior triangle of the neck anterior along the upper third of the sternocleidomastoid muscle, rarely these have been reported at other sites like the lower third of the sternocleidomastoid and the posterior triangle of the neck.[4,5]. The may remain non progressive, or may sometimes grow in size, especially after an upper respiratory tract infection and can present with signs of inflammation and abscess formation such as pain and edema. If there is a massive enlargement, it can lead to obstructive symptoms. For diagnosis, CT scan, ultrasound or MRI can be done showing a fluid filled cystic swelling and it can be confirmed by a fine-needle aspiration cytology. Mainstay of treatment is surgical excision of the cyst, although one can give a course of antibiotics preoperatively if the cyst is infected.[6]

Case Report

A 9 year old female presented to ENT OPD with the complaint of a swelling on the right side of the neck for six years. The swelling was insidious in onset and gradually progressive but rapidly increased in size over the past six months. There were no associated complaints of change of voice, difficulty in breathing or swallowing. There was no history of loss of weight or appetite, and no significant past or family history.

On local examination, inspection revealed a 9 x 6 cm swelling in the right posterior triangle of neck extending from clavicle anteriorly to trapezius posteriorly and sternocleidomastoid medically to lateral end of clavicle laterally (Fig.1).

On palpating, it was found to be soft, cystic, non tender, non-mobile. It was fluctuant and compressible but non reducible. Furthermore, it was non pulsatile and the overlying skin was normal and non-adherent. No bruit was heard on auscultation. The local and regional lymph node examination was

unremarkable. Examination of the nose, pharynx and larynx demonstrated no abnormality. Extraoral and intraoral examination revealed no significant findings.

An ultrasound neck was done and revealed a 9.5 x 3 cm large cystic lesion with fine septations, in subcutaneous soft tissue and intramuscular spaces on right neck, indicating a brachial cyst.

Fine needle aspiration cytology showed lymphocytic infiltrate along with scattered anucleate squames suggestive of a benign cystic pathology.

An MRI neck without contrast was done which showed a fluid intensity well defined lesion in right mid and lower posterior cervical space with superior level up to C5 and extended inferiorly upto the right supraspinatous muscle. Showed partial septae within but no hemorrhage or solid component (Fig.2).

The patient underwent excision of the cyst 15 days after the visit. A transverse incision was made over the swelling extending 2 cm above junction of medial third and lateral two thirds of clavicle anteriorly upto anterior border of trapezius muscle posteriorly, followed by identification and dissection of the cyst with careful preservation of the surrounding vital structures, especially right branchial plexus and right lung apex. The cyst was removed in toto. The excised gross specimen measured 10.5 × 7.5 × 5 cm and was sent for histopathology (Fig.3).

The postoperative course was uneventful, and the patient was discharged 7 days postoperatively. The histopathological report confirmed the diagnosis of branchial cyst.

Fig.1

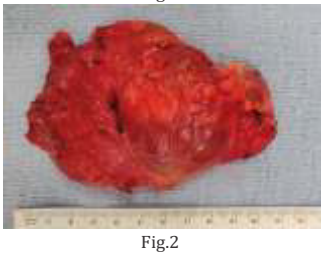

Fig.2

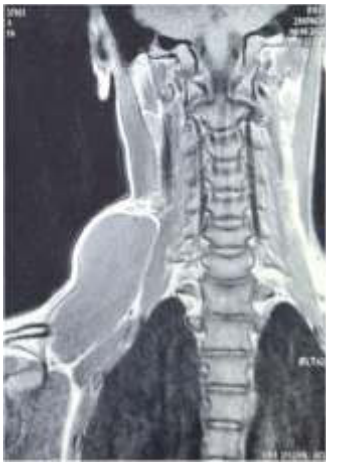

Fig.2- MRI neck coronal view

Discussion

Brachial cleft cyst is one of the common causes of lateral neck soft tissue swellings in older children or young adults and are generally seen to occur unilaterally. Few studies report no gender predilection, but there are some that say that branchial cysts are more commonly seen in females than males and they usually present in the 3rd decade of life[7] as a painless swelling on the lateral aspect of the neck. When it is seen in older adults, metastatic lymphadenopathy, lymphoma or tuberculosis must be excluded.[8]

Clinically, it is an asymptomatic swelling on the lateral aspect of neck which is slow growing and has well defined margins. Sometimes they may present as tender swellings with other signs of inflammation due to infection of the cyst.

Etiology of a branchial cleft cyst is considered to be controversial. Till now are four main theories of its origin have been postulated which include incomplete obliteration of branchial mucosa, persistence of vestiges of the pre-cervical sinus, thymo-pharyngeal ductal origin and cystic lymph node origin. Among these, the first one is most widely accepted.[9]

In the second week of fetal life, the branchial apparatus begins to form and completion is by the sixth or seventh week. There is formation of 5 branchial arches which give rise to the structures in head, neck and thorax. The third and fourth arches are covered by the caudally growing second arch and the buried clefts become ectoderm-lined cavities, and these clefts normally involute around seventh week of development. Due to failure of complete involution of a portion of the cleft, there occurs formation of an epithelium-lined cyst with or without a sinus tract reaching upto the overlying skin.[10]

According to King's criteria, any cyst arising outside the midline of the neck and having lymphoepithelial characteristics should be regarded as a branchial cyst.[11,12] But most commonly it is seen in the anterior triangle of neck along the anterior border of sternocleidomastoid muscle.

The clinician must consider the possibility of metastatic squamous cell carcinoma as a differential at this location of the neck. It may also be a thyroglossal tract cyst, lipomatosis, tuberculosis-related lymphadenitis (scrofula), HIV-related lymphadenopathy, cat-scratch disease, sarcoidosis or Hodgkin lymphoma.[13,14] Other entities though seen to

be far less common are vascular neoplasms, carotid body tumor, lymphatic malformation (cystic hygroma), ectopic thyroid tissue, ectopic salivary tissue, and glomus tumor of head and neck.

For diagnosis, an ultrasound, CT scan or an MRI scan can be done, all of which will show a fluid-filled cyst picture and they will also outline its size and anatomic relationships. Though MRI is the investigation of choice, the CT scan will also show the characteristic thick wall of a branchial cyst. A fine-needle aspirate cytology will confirm the diagnosis by presence of anucleate, keratinized cells, squamous epithelial cells in a background of amorphous debris, and often inflammatory cells.[15]

On histopathology, the lining of a branchial cyst is generally stratified squamous or pseudo stratified columnar ciliates epithelium. It may also be ulcerated. The connective tissue wall contains lymphoid tissue in abundance with presence of typical germinal centers.[13,16]

Surgical excision is the mainstay of treatment and their residual tract is ligated. Recurrence is rare and could be associated with carcinoma.[13]

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