



Third Branchial Cleft Cyst in an Adult - A Very Rare Entity.

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Abstract : Branchial cleft cysts are rare entities that represent abnormal persistence of the branchial apparatus. The most common of these are the second branchial cysts. Third branchial cleft cysts are very uncommon representing only 2 of all the brachial cleft cysts. The presentation is common in infancy or childhood, with adult manifestation unusual. Here we present a case of third branchial cleft cyst in a 30 year old adult. MRI was done to characterise the lesion and the patient underwent complete excision of the cyst.

Keyword : Branchial cleft cyst, cystic lesion neck, posterior triangle

Introduction :

Branchial cleft cyst is a developmental cyst. The term branchial cleft cyst refers to the lesions which can be considered synonymous with the **cervical lymphoepithelial cyst**. Branchial cleft cysts may arise from remnants of the first, second, third or fourth branchial arches. Most branchial cleft cysts are of second branchial arch origin and are commonly found in the anterior triangle of the neck anterior to the upper third of the sternocleidomastoid muscle on the left side. The third branchial cleft cyst is very uncommon and is present posterior to the sternocleidomastoid muscle in the **posterior triangle**.

Case report :

A 30 year old gentleman presented with a swelling in the left supraclavicular area in the posterior triangle. The duration of the cyst was for a period of one year. It was initially small to start with and gradually enlarged. It was not associated with pain. **On examination** the swelling was present in the posterior triangle in the supraclavicular region, of size 3.5x4 cm. The surface was smooth, borders well defined, but the inferior border could not be made out. It was cystic in consistency with positive transillumination (but not brilliantly transilluminant). Skin over the swelling was free, the swelling had limited mobility.



Fig 1. Clinical picture showing swelling in the posterior triangle of neck.

Ultrasound demonstrated cystic lesion.

MRI was taken which showed hyperintensity in T2 weighted images, showing a simple cystic lesion of size 3.7 x 4 cm in the posterior triangle with no intra thoracic extension. T1 weighted images showed hypointensity.

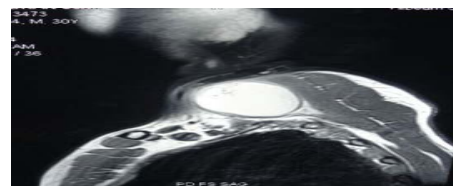


Fig 2. MRI T2 weighted image sagittal - cystic lesion showing hyperintensity.



Fig 3. MRI T2 weighted image coronal - cystic lesion in the posterior triangle of neck showing hyperintensity.

Fnac from the cyst showed straw coloured fluid with cytology picture of cyst macrophages and few inflammatory cells; features consistent with benign cystic lesion. The patient underwent surgery; **complete excision** of the cyst was performed. A transverse incision was used and subplatysmal flaps were raised. The cyst was dissected carefully and freed from the surrounding structures, there was some adherence to the sternocleidomastoid muscle. The cyst was excised completely making sure no vital structures were injured.



Fig 4. Specimen.

HPE examination showed cyst wall lined with squamous epithelium with lymphoid aggregates and hemosiderin laden macrophages – features consistent with **branchial cleft cyst**.

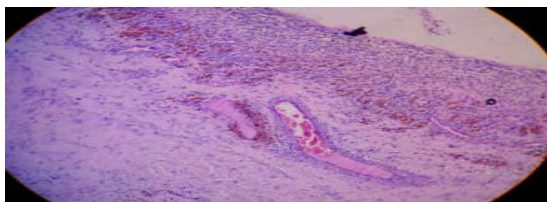


Fig 5. HPE image showing lymphoid aggregates and hemosiderin laden macrophages.

The patient's post operative period was uneventful.

Discussion :

At least four theories have been proposed regarding the origin of the branchial cleft cyst. These include incomplete obliteration of branchial mucosa, persistence of vestiges of the precervical sinus, thymopharyngeal ductal origin and cystic lymph node origin. The controversy over the aetiology of the swelling has given rise to a multitude of terms to describe the same lesion, such as dermoid cyst of sheath of the internal jugular vein, deep seated atheromatous tumour, congenital hydrocoele of the neck, hygroma colli, branchial cyst, tumour of branchial cleft, lateral lymphoepithelial cyst and benign cystic lymph node.[1][7] At the fourth week of embryonic life, the development of 4 branchial (or pharyngeal) clefts results in 5 ridges known as the branchial (or pharyngeal) arches, which contribute to the formation of various structures of the head, the neck, and the thorax. The second arch grows caudally and, ultimately, covers the third and fourth arches. The buried clefts become ectoderm-lined cavities, which normally involute around week 7 of development. If a portion of the cleft fails to involute completely, the entrapped remnant forms an epithelium-lined cyst with or without a sinus tract to the overlying skin. [3][7]

The most common of the branchial cleft cysts is the second branchial cleft cyst which constitutes about 95% . The third branchial cleft cyst is rare and constitutes only 2%.[2] The difference between second and third branchial cleft cyst must be made; the second branchial cleft cyst lies anterior to sternocleidomastoid muscle whereas the third branchial cleft cyst lies posterior to it. The fourth branchial cleft cyst is very rare and may extend into the mediastinum.[4][5] Imaging to delineate the anatomy of the branchial cleft cyst is done by a CT or an MRI. MRI images show these cysts as hyperintense in T2 images and hypointense in T1 images.[6] Surgery remains the treatment of choice for these rare cysts.[8] Recurrences are known to occur following complete surgical excision of the branchial cleft cyst. The overall recurrence

rate ranges from 3–20%.[9]

Conclusion :

Third branchial cleft cyst is a very rare lesion of the head and neck and even more unusual presenting in an adult. These cysts have to be kept in mind while assessing cystic swellings of the neck. This case has been presented due to its rarity.

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