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Case Series

Unusual presentations of branchial cyst

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ABSTRACT

Branchial cyst is a developmental cyst commonly presenting as a solitary, painless neck mass, typically located over lateral aspect of the neck. Most commonly located along the anterior border and the upper third of the sternocleidomastoid muscle in the anterior triangle of the neck, it is very rare for a branchial cyst to manifest in other locations. Branchial cysts are believed to be derived from the branchial apparatus, mostly from the second branchial arch, although many theories have been proposed to explain the aetiology of branchial cysts. Congenital branchial cysts of the nasopharynx originate from the lateral nasopharynx with an inferior and medial extension. This rare and unusual occurrence of the cyst is characterised by its avid mucus secretion and unilateral presentation. Here we present four different presentations of branchial cyst - as a midline swelling, an unusually large presentation, nasopharyngeal presentation. Histopathology report showed cyst lined by stratified squamous epithelium and pseudo stratified ciliated columnar epithelium at places along with subepithelial lymphocytes suggesting branchial cyst. Hence, Branchial cyst should also be taken as one of the differential diagnoses in cystic lesions of the neck and lateral cystic lesions of nasopharynx.

Keywords: Branchial cyst, Neck masses, Midline swelling, Sternocleidomastoid muscle

INTRODUCTION

Branchial cyst is a unilateral, slow-growing, fluctuant soft- tissue swelling that typically appears in the lateral aspect of the neck. It is also termed as congenital hydrocoele of the neck, hygroma colli, lateral lymphoepithelial cyst, and benign cystic lymph nodes.[2] Branchial cysts are congenital in nature although clinically they present later in life, usually in late childhood or early adulthood. A close association with the external ear, angle of the mandible and upper lateral aspect of the neck is usually observed, which is consistent with the fetal location of the branchial apparatus. The swelling typically develops at the junction between the upper third and lower two-thirds of the anterior of the sternocleidomastoid muscle, but it can occur at any level from the hyoid to the suprasternal notch.[3] These have rarely been reported in the lower third of the sternocleidomastoid and in the posterior triangle of the neck.[1]

Branchial cysts may arise from remnants of the first, second or third branchial arches. Most are of second branchial arch origin.[1] There is no gender or racial predilection according to most observers. However, some authors have found branchial cysts to occur more commonly in females, while others claim that 60% of cases occur in males. Many branchial cysts are asymptomatic; however, they may become tender, enlarged or inflamed, especially during periods of upper respiratory tract infection owing to the lymphoid tissue located beneath the epithelium. In some instances, branchial cyst patients may present with locally compressive symptoms if the cyst grows to a large enough size to compress the adjacent structures in the neck. Depending on the size and the anatomical extension

of the mass, local symptoms such as dysphagia, dysphonia and dyspnoea may occur. A few cysts may have a definite tract to the posterior pillar of the tonsil but most of them do not.[3]

CASE SERIES

In this case report series different branchial cyst presentations has been discussed namely-presentation as a midline swelling, an unusually large presentation and a midline nasopharyngeal presentation.

In case 1 (Figure 1)-A 47yr old male patient presented to ENT OPD with a midline neck swelling since 4months. He was in the habit of tobacco chewing for the past 1year.

On clinical neck examination - A 3×3 cm size solitary neck swelling was found to be in the midline of upper part of the neck extending horizontally about 3 cm from anterior border of sternocleidomastoid on either side and vertically about 1cm above the thyroid notch (Figure 1). Skin over the swelling was smooth, pinchable. Mass was cystic in consistency with well defined margins, mobile, non tender, moves on deglutition. Transillumination test was positive. No local rise in temperature, visible scars, sinuses, pulsations or fistula over the swelling. No palpable lymph nodes.

In case 2 (Figure 2)-A 20 year female patient presented with complaints of swelling in the neck near the suprasternal notch since 2years which was initially pea sized and gradually progressed to the present size.

On clinical examination, a solitary neck swelling of size 3×3 cm was present in suprasternal region extending 2cm below cricoid cartilage to suprasternal notch below. Skin over the swelling was smooth, pinchable. Swelling was found to be non pulsatile, cystic in consistency, with well defined margins, mobile, non tender, moves on deglutition. Transillumination test was positive. No local rise in temperature, visible scars, sinuses, pulsations or fistula over the swelling. No palpable lymph nodes. Laryngeal crepitus present.

In case 3 (Figure 3)-A 33 year old male presented with a gradually progressive painless swelling on left side of neck since 1 year. The mass was painless, slowly enlarging and extending upward up to the lower jaw and downward till the supraclavicular region. Patient had no pressure symptoms. There was no history of change in size of swelling. On clinical examination, a solitary swelling size 8×6 cm in left lateral neck along the sternocleidomastoid muscle extending superiorly to parotid region and inferiorly up to the junction of upper two-third to lower one-third of sternocleidomastoid muscle. The mass was nontender, cystic. It was not moving with deglutition and tongue protrusion. It was non-tender, soft in consistency and fluctuant.

In case 4 (Figure 4-7)- A 40 year old female presented to OPD with complaints of bilateral nasal obstruction since 3 months, with history of mouth breathing and snoring. She also gave history of foreign body sensation in throat since 1 month, with difficulty in swallowing. She also reported a change in speech as well from past 1 month. Patient also gives a history of reduced hearing from left ear since childhood, which was non progressive, confined to whispers.

Examination revealed a well-circumscribed yellow globular mass in the nasopharynx (Figure 5). The mass was was attached to the posterolateral aspect of the nasopharynx on the left side. It extended from the roof of the nasopharynx superiorly to the middle of the right tonsil inferiorly (Figure 4). Medially, the mass crossed the midline; laterally, it was attached to the lateral nasopharyngeal wall, obliterating ET orifice. On palpation, the mass was cystic in its consistency.

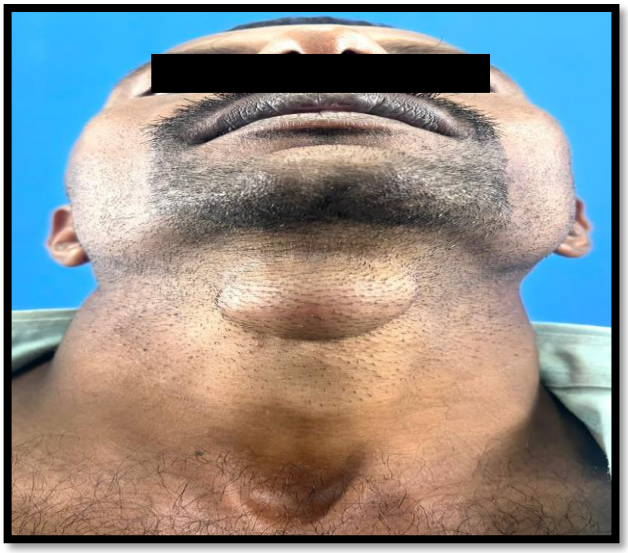

Figure1: Clinical image showing midline neck swelling (Case 1).

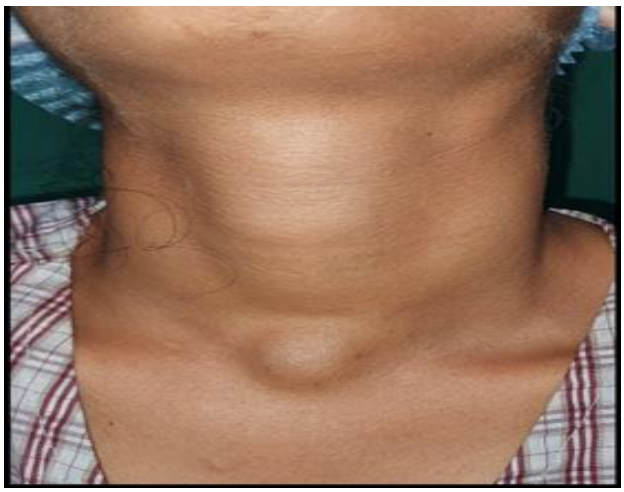

Figure 2: Clinical image showing the location of neck swelling (Case 2).

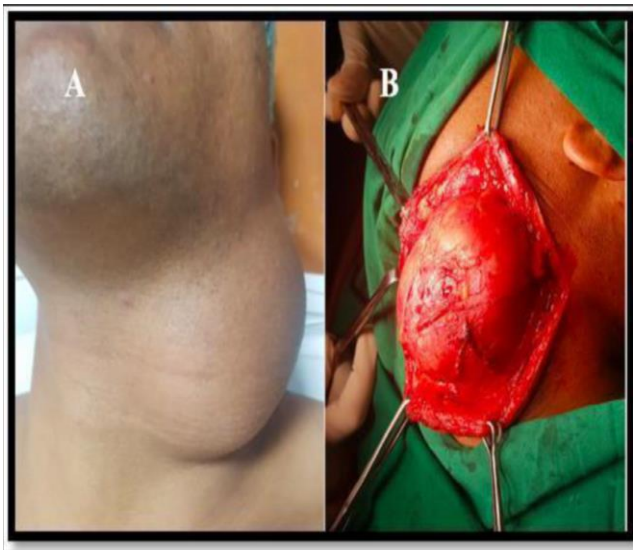

Figure 3: An unusually large lateral neck presentation-branchial cyst (Case 3).

Figure 4: Globular mass visualised extending to oropharnyx (Case 4).

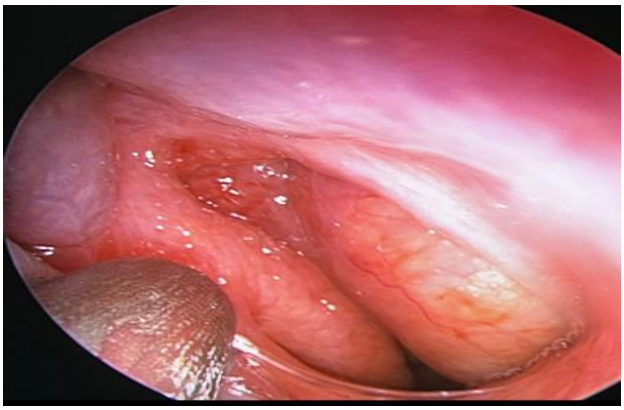

Figure 5: Endoscopic image showing globular mass occupying nasopharynx (Left nasal cavity) (Case 4).

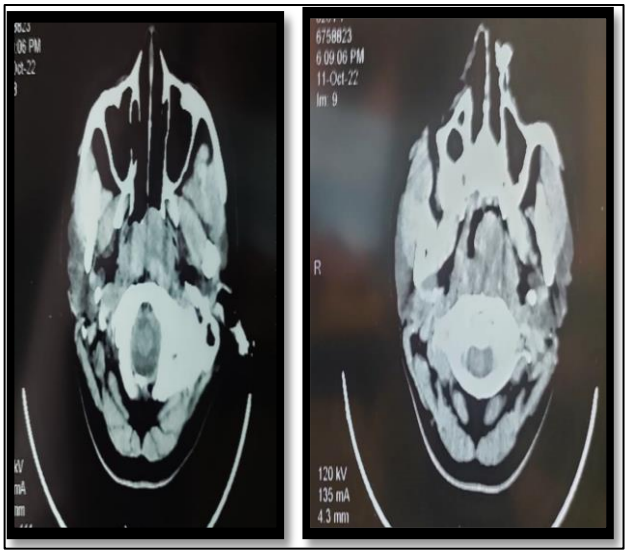

Figure 6: CECT (axial view) showing hypodense cystic lesion (Case 4).

Ultrasonogram neck was carried out in the cases 1 and 2 which showed a well defined anechoic cystic area noted in the subcutaneous plane with internal echoes and peripheral vascularity on color Doppler study. The lesion was seen to move with deglutition. The revealed features were likely suggestive of infected thyroglossal cyst. FNAC of the neck mass was carried out for further evaluation and the smear studied showed moderately cellular aspirate comprising of uncleared and anucleate squares. The revealed features were suggestive of thyroglossal cyst. Patient was started on IV antibiotics. In case 4-Patient underwent contrast enhanced CT (skull base to mediastinum) which revealed a hypodense cystic lesion approximately measuring 2.8×3×2.2 cm noted involving the nasopharynx likely arising from fossa of Rosenmuller on the left side causing significant luminal narrowing. Inferiorly lesion was seen extended to the oropharynx with the involvement of left tonsillar foss, with no signs of invasion or destruction of the adjacent tissues or skull base, suggestive of Thornwaldt's cyst (Figure 6).

Surgical excision was carried out in the first three cases without rupture of its cystic contents and complete excision was facilitated. In case 4, the cyst wall was marsupialized using a microdebrider though a transnasal endoscopic completely from the wall of the nasopharynx. A portion of cyst wall was excised, collected and sent for histopathological study in all four cases (Figure 6). All the Patients were started on IV antibiotics post surgery.

The excised tissue- was grossed in all the cases. On microscopy multiple sections studied showed a cyst lined by benign epithelial cells along with cartilaginous and bony tissue (Figure 7). After clinical and radiological diagnosis suspicion, Branchial cyst is confirmed histologically by a cystic cavity lined by epithelium and underlying connective tissue showing germinal centers.

The lining is generally stratified squamous epithelium, and the germinal centers are contained within abundant lymphoid tissue.

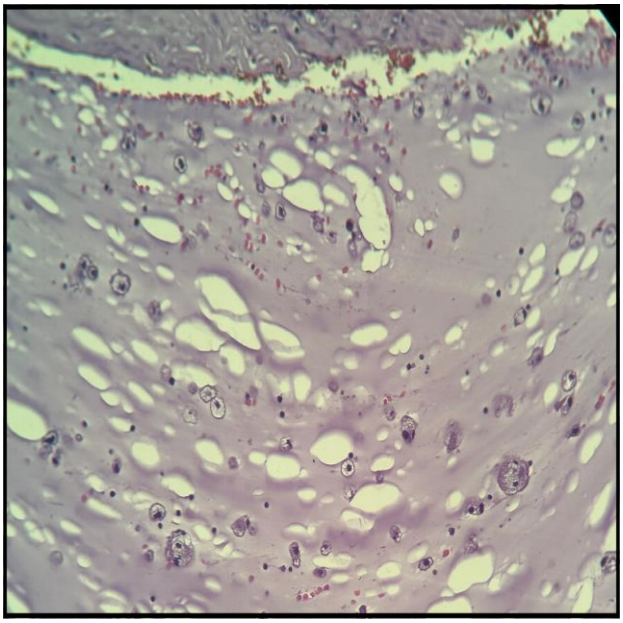

Figure 7: Cystic cavity lined by granulation tissue and focal respiratory epithelium containing mucoid material and numerous cyst macrophages.

DISCUSSION

Branchial cleft cysts are among the most common congenital neck masses, which commonly occurs in the upper lateral neck along the anterior border of the sternocleidomastoid muscle. Of all branchial anomalies, branchial cleft cysts comprise approximately 75% to 80%, 95% of these cysts arise from the second branchial arch, 5% originate from the first, third and fourth branchial arches. Branchial cleft cyst most commonly occurs, in the upper lateral neck along the anterior border of the sternocleidomastoid muscle.

There are various theories which explain the origin of branchial cyst i.e., incomplete obliteration of branchial mucosa, cervical sinus of his theory, thymo-pharyngeal duct theory and cystic degeneration of lymph node. According to King, any cyst in the lateral wall of neck with lymphoepithelial features is regarded as branchial cyst. Our case is an exception for King's criteria as this was in the midline submental region.[6]

The clinical differential diagnosis of branchial cleft cyst is lipomatosis, tuberculosis lymphadenitis, HIV-related lymphadenopathy, cat-scratch disease, sarcoidosis and Hodgkin's lymphoma.[2] A thyroglossal duct cyst may also be considered as a differential owing to it being a midline swelling. Other far less common entities such as vascular neoplasms, carotid body tumor, lymphatic malformation (cystic hygroma), ectopic thyroid tissue, ectopic salivary tissue, and glomus tumor of head and neck are also to be considered.[2]

According to Mada Lakshmi Narayana et al branchial cleft cyst is a congenital abnormality typically located over the lateral aspect of neck, however, it can rarely present as a cystic midline neck mass and hence should be considered as one of the differential diagnoses if it's not moving with deglutition and with tongue protrusion.[6]

Thyroglossal duct cyst are well circumscribed anechoic cystic lesion in the midline but are related to the undersurface of hyoid bone. In case 1 and 2, we had provisionally diagnosed it as thyroglossal cyst based on the clinical examination, ultrasonogram findings and FNAC impression. However, the histopathologic findings pointed towards the diagnosis as branchial cyst. Histopathologically, a cystic cavity lined by granulation tissue and focal respiratory epithelium containing mucoid material and numerous cyst macrophages were made out in favor of our diagnosis while, thyroglossal duct cysts would show nonkeratinizing stratified epithelium with the presence of thyroid follicles in the cyst wall. Thus, the possibility of it being thyroglossal cyst was ruled out.

Cysts arising from the nasopharynx are classified into midline and lateral types. These are further grouped into congenital and acquired. The most common cause of lateral nasopharyngeal cysts are branchiogenic cysts.[7] Congenital branchial cleft cysts of the nasopharynx are rare and usually originate from the lateral nasopharynx with inferior and medial extension. The cysts usually secrete mucus and occur unilaterally and singly.[8] Most Nasophryngeal branchial cysts are small and asymptomatic, whereas some cause nasal obstruction, postnasal drip, occipital headache, or Eustachian tube dysfunction.[8] The diagnosis of a cyst of branchial origin is mainly based on the anatomic location and histopathologic features.

Surgical excision of the Branchial cyst is the treatment of choice and is considered definitive. Complications of surgical treatment include recurrence, formation of a persistent fistula and damage to the cranial nerves. Alternative treatments, such as percutaneous sclerotherapy, are promising but remain unproven. In our case, the patient was placed under general anesthesia and the lesion was excised along with mid part of body of hyoid under the diagnostic impression of a thyroglossal cyst however the duct could not be traced, along with an intraoperative rupture of the cystic mass. The histopathologic impression of the excised lesion was that of a remanent branchial cyst. Recurrences are known to occur following complete surgical excision of the BCCs, as seen in a large retrospective study where the overall recurrence rate was noted to be 4.9% after a 2 year follow-up period, while in other studies a recurrence rate of 3-20% was reported.[1] In our case, the patient was symptomatically better postoperatively and did not present with any signs of recurrence in the three month follow up period.

CONCLUSION

Branchial cyst is a developmental cyst commonly presenting in the lateral neck region. However, when compared to its usual presentations, these cases were exceptions, as two were found in the midline along the subcutaneous plane, while the third was an unusually large lateral neck presentation and the fourth case presented in the nasopharynx.

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REFERENCES

1. Panchbhai AS, Choudhary MS. Branchial cleft cyst at an unusual location: A rare case with a brief review. Dentomaxillofacial Radiol. 2012;41(8):696-702.
2. Lakshmi RS, Nandhini G, Jayant VS, Rajkumar K. Branchial cleft cyst: A case report and literature review. SRM J Res Dent Sci. 2017;8:88-91.
3. Panchbhai AS, Choudhary MS. Branchial cleft cyst at an unusual location: a rare case with a brief review. Dentomaxillofac Radiol. 2012;41(8):696-702.
4. Chavan S, Deshmukh R, Karande P, Ingale Y. Branchial cleft cyst: A case report and review of literature. J Oral Maxillofac Pathol. 2014;18(1):150.
5. Boringi M, Bontha SC, Kaur M, Shireen A. Branchial cleft cyst-A case report with review of literature. J Orofac Sci. 2014;6:125-8.
6. Narayana ML, Viswambharan V, Kumarguru BN. Submental midline branchial cleft cyst: a first case report in literature. Int J Otorhinolaryngol Head Neck Surg. 2019;5:808-10.
7. Wein R, Flis D. Nasopharyngeal branchial cysts-diagnosis and management: A case series. J Neurological Surg Part B: Skull Base. 2012;74(01):050-3.
8. Chen P-S, Lin Y-C, Lin Y-S. Nasopharyngeal branchial cleft cyst. J Chin Med Asso. 2012;75(12):660-2.

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