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BRANCHIAL CLEFT CYST: A CASE REPORT AND REVIEW OF LITERATURE

General Surgery

Prof. Dr. Siddharth P. Dubhashi* Professor And Head, Department Of Surgery All India Institute Of Medical Sciences (AIIMS), Nagpur *Corresponding Author

Dr. Divish Saxena Associate Professor, Department Of Surgery All India Institute Of Medical Sciences (AIIMS), Nagpur

Dr. Bhupendra Mehra Professor, Department Of Surgery All India Institute Of Medical Sciences (AIIMS), Nagpur

ABSTRACT

Branchial cysts account for 25% of head and neck congenital swellings. These lesions can pose a diagnostic challenge. This is a case report of a branchial cleft cyst in a 16 year old male. A high index of suspicion along with imaging studies helps the clinician to rule out other differential diagnoses. Elective in-toto excision is the standard treatment, to avoid risk of infection. Incomplete removal results in recurrence.

KEYWORDS

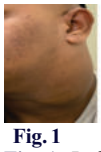
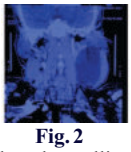
Branchial cyst; neck swelling; squamous; lymphoid; excision

INTRODUCTION:

Branchial cleft cyst is a benign lesion occurring due to developmental defect of the branchial apparatus, accounting for 25% of head and neck congenital swellings. Second branchial cleft cyst represents occurs in 95% branchial anomalies, located in the lateral aspect of the neck, usually anterior to upper third of sternocleidomastoid muscle.[1] This is a report of a 16 year old male with a left-sided neck swelling.

Case Report:

A 16 years old male presented with swelling in left lateral aspect of neck since 3 months measuring approximately of size 12 cms x 7cms, not associated with pain or fever. There was no difficulty in neck movements and no symptoms of dysphagia or dyspnoea. There were no other swellings in neck or axillary / inguinal region. On clinical examination, a single swelling was present on left antero-lateral aspect of neck measuring 12 x 7 cms in size, soft, non-tender, immobile, with non-fixity to overlying skin (Fig.1). There was no cervical lymphadenopathy and thyroid gland was not enlarged. Ultrasound of neck revealed a large cystic swelling of size 13.5 x 8.5 cms unilocular, non-vascular, mixed echogenic mass displacing the left internal jugular vein laterally, causing mild compression with no evidence of any cervical lymphadenopathy with a probable diagnosis of left Branchial cyst. Contrast-Enhanced CT scan of neck showed a similar finding of huge unilocular cystic mass of size 13.5 x 8.0 cms containing clear fluid with wall thickness of 4 mm abutting left internal jugular vein in most of its course and displacing left internal carotid postero-laterally, however, maintaining the tissue planes, suggesting a diagnosis of left branchial cyst (Fig. 2). The rest of soft tissue structures in neck and trachea were unremarkable. Fine Needle Aspiration Cytology (FNAC) was suggestive of squamous lined lateral neck cyst with an impression of Branchial cyst. Other haematological and biochemical parameters were normal. The patient underwent total excision of cyst under general anesthesia. It was a single thin-walled cyst of size 13 x 8 cms located deep to platysma having flimsy adhesions to surrounding structures with no evidence of involvement / adhesion to either internal jugular or internal carotid vessels (Fig. 3 A, B). The cyst contained turbid greenish fluid. The post-operative course was uneventful and patient was discharged on 5th post-operative day after removal of drain. The histopathology report showed features of Branchial cleft cyst lined by squamous epithelium, with evidence of lymphoid tissue. The post-operative course was uneventful and the patient has been asymptomatic in the follow-up period of one year till date.

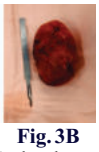


Fig. 1 **Fig. 2** **Fig. 3A** **Fig. 3B**

Fig. 1: Left lateral neck swelling;. **Fig. 2:** CT Scan Neck - huge unilocular cystic mass abutting left internal jugular vein and displacing left internal carotid postero-laterally; **Fig. 3A:** Cyst excision in-toto; **Fig. 3B:** Excised specimen

DISCUSSION:

Branchial cyst was first reported in 1785 by Hunzovsky.[2] The term was first coined in 1832 by Ascherson.[3] The development of the branchial apparatus occurs between the third and seventh weeks of fetal life. The six pairs of arches are separated externally by invagination of ectoderm (clefts) and internally by endodermal lining (pouches).The fifth arch is rudimentary. The anomalies usually present in first and second decade of life, can be bilateral, with no gender predilection.[4] Various theories have been put forth to explain the genesis of branchial cysts:[4,5]

Precervical sinus theory (Ascherson, 1886): Cyst represents the vestiges of cervical sinus.

Branchial Apparatus Theory (Ascherson): Incomplete involution of branchial cleft results in entrapment of remnant, which develops into an epithelium-lined cyst, with or without communication with skin surface.

Lymph Node Theory (King, 1949): Cystic changes in the parotid epithelium get entrapped in the cervical lymph nodes.

Thymo-pharyngeal Duct Theory: Remnant of an original connection between thymus and third branchial pouch.

First branchial cleft cysts are rare and situated in relation to parotid gland and external auditory canal, or in relation to the submandibular gland. A characteristic history of multiple drainage procedures in neck is elicited in these patients.[2]

The Second Branchial Cleft Cysts Are Classified Into Four Types By Bailey:[6]

Type I: Superficial, along anterior surface of sternocleidomastoid deep to platysma, but not in contact with carotid sheath

Type II: Anterior to sternocleidomastoid, posterior to submandibular gland, adjacent and lateral to carotid sheath

Type III: Extends medially between the bifurcation of the internal and external carotid arteries, lateral to the pharyngeal wall

Type IV: Lies deep to the carotid sheath within the pharyngeal mucosal space and opens into the pharynx.

Our case was of Type II. Investigations include FNAC, Ultrasound examination of the neck and Computed Tomography scan. The lesion appears as a well defined anechoic compressible lesion with a thin wall with acoustic enhancement. CT Scan helps in defining the relationship of the cyst to adjacent vital structures in a better way, with an accuracy of 90%.[7,8] All the three investigations proved useful in arriving at the pre-operative diagnosis of branchial cyst in our case. Similar reports have been cited in literature.[9]

Surgical excision is the treatment of choice. This would obviate the risk of infections. Incomplete removal results in recurrence. The cysts are filled with grey-yellow straw colored fluid containing cholesterol

crystals. The histopathology reveals characteristic findings of a squamous epithelium lining with subepithelial infiltration of lymphocytes. Columnar and ciliated epithelium may be seen in less than 10% cases.[10,11]

In this case, the peculiar site of occurrence of the lesion hinted the origin from second branchial arch. Histopathology findings confirmed the diagnosis.

CONCLUSION:

Branchial cysts present as asymptomatic swellings in lateral aspect of neck. A high index of suspicion along with imaging studies helps the clinician to rule out other differential diagnoses. Elective in-toto excision is the standard treatment.

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