International Surgery Journal
Tambat RM et al. Int Surg J. 2021 Oct;8(10):3217-3219
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20214030

Case Report

Type I second branchial cleft cyst in an adult patient

Ramesh M. Tambat[1], Nitish A. Golasangi[1], Siddesh Guttidurga Basavaraj[1], Suhas Pandrinath[1], Yogendra Shrestha[2]*, Jeet B. Moktan[2]

[1]Department of Surgery, Sapthagiri Institute of Medical Sciences, Bangalore, Karnataka, India
[2]Department of Pharmacy Practice, Sri Adichunchanagiri College of Pharmacy, Adichunchanagiri University, Karnataka, India

Received: 13 August 2021
Accepted: 08 September 2021

***Correspondence:**
Dr. Yogendra Shrestha,
E-mail: dryogendrastha@gmail.com

ABSTRACT

Branchial cleft anomalies are rare diseases of head and neck region. Second branchial cleft anomalies represent more than 95% of all branchial cleft anomalies. Second branchial cleft cyst is a benign developmental cyst due to the incomplete obliteration of pharyngeal cleft. A 46-year-old female patient reported to hospital with a complaint of swelling over the left side of the neck since 4 to 5 months. On clinical examination, swelling was seen below and behind the angle of mandible on the left side. The patient was evaluated using ultrasound and contrast enhanced computerized tomography (CECT) of neck which revealed second left bronchial cleft cyst/enlarged cystic lymph-node. Fine needle aspiration cytology of the swelling showed features of cystic lesion. Type-I branchial cleft cyst is a rare condition with a significant risk of misdiagnosis. To avert misdiagnosis and surgical complications, thorough investigation must be performed prior to surgical intervention.

Keywords: Branchial cleft, Cyst, Type-I branchial cleft cyst

INTRODUCTION

During the fifth week of fetal growth, major head and neck structures are formed. Basic connective tissue that produces cartilage, bone, muscle, and blood vessels is present in the five pharyngeal arches, which are developed structures. Anomalies or abnormalities in the neck occur from incomplete, failing, or chronic embryonic development of these arches.[1]

Congenital anomalies occurring from the first through fourth pharyngeal clefts are characterized as branchial cleft cysts. The most frequent kind of branchial cleft cyst is caused by the second cleft, whereas abnormalities caused by the first, third, and fourth clefts are rare. It is present at birth since it is a congenital anomaly, however it may not be visible or symptomatic until later.[2] Cysts of the second branchial arch are benign developmental cysts that are believed to arise from congenital remnant of the second branchial arch and represent 40-95% of all branchial cleft anomalies.[2-5]

The Bailey-Proctor classification divides second branchial cleft cyst (BCC) into 4 types.[6] Type-I cysts are situated along anterior border of sternocleidomastoid muscle beneath superficial cervical fascia. Type-II ones are the commonest and lie just laterally to great vessels beneath enveloping fascia of the neck. Type-III ones pass between internal and external carotid arteries. Type-IV cysts are situated in the pharyngeal mucosal space just deep to palatine tonsil and medial to great neck vessels, often extending upward towards skull base.

In this report, we present a type I second branchial cleft cyst that is soft in consistency, non-tender, and mobile in the left side of neck, posterior to the submandibular gland and deep anterior to the sternocleidomastoid muscle.

CASE REPORT

A 46-year-old female patient visited to hospital with a complaint of swelling over the left side of the neck since 4 to 5 months. On clinical examination, swelling was observed below and behind the angle of the mandible on the left side, measuring 4×5 cm and extending 2 cm below the base of the mandible. The swelling was anterior and deep to sternocleidomastoid muscle. On palpation; soft in consistency, non-tender and mobile antero-posteriorly. No other palpable neck swellings noted and the right side of the neck appeared normal. There was no fever or other signs of acute inflammation. Neurological symptoms were absent, and cranial nerve examination was normal. Ultrasound of the neck revealed a thick-walled cystic lesion in the upper neck on the left side, measuring 2.6×3.1×3.9 cm in diameter, with a volume of 17.16 ml and echogenic internal contents, suggesting infected bronchial cleft cyst or epidermal cyst as differentials. Fine needle aspiration cytology (FNAC) of the swelling showed features of cystic lesion. Contrast enhanced computerized tomography (CECT) of neck was advised and it shown a well-circumscribed cystic mass in the left side neck, posterior to the submandibular gland and anterior to the sternocleidomastoid muscle (Figure 1).

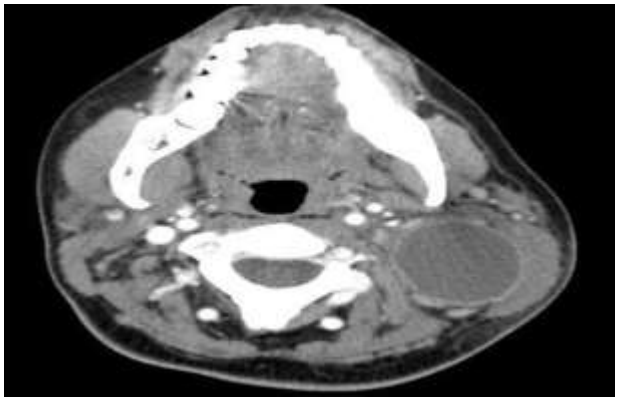

Figure 1: CECT of neck shows a well-circumscribed cystic mass in the left side neck, posterior to the submandibular gland and anterior to the sternocleidomastoid muscle.

Based on these findings, the patient was admitted to a hospital for a complete cyst excision under general anesthesia. Broad-spectrum antibiotic was used as a surgical prophylaxis. Intraoperative findings revealed a cystic lesion that was non-adherent to any other structures and required complete excision (Figure 2a and b). Excised tissue was sent for histopathological examination (HPE). HPE report was consistent with branchial cyst. Gross specimen showed cystic structure measuring 4×3×2 cm and 5 cm in length, cut surface of the cyst showed mucoid material (Figure 3). The patient was hospitalized for 48 hours postoperatively under broad-spectrum IV antibiotic. Patient was stable during postoperative period. At six months of follow-up, the patient had healed completely and there was no recurrence.

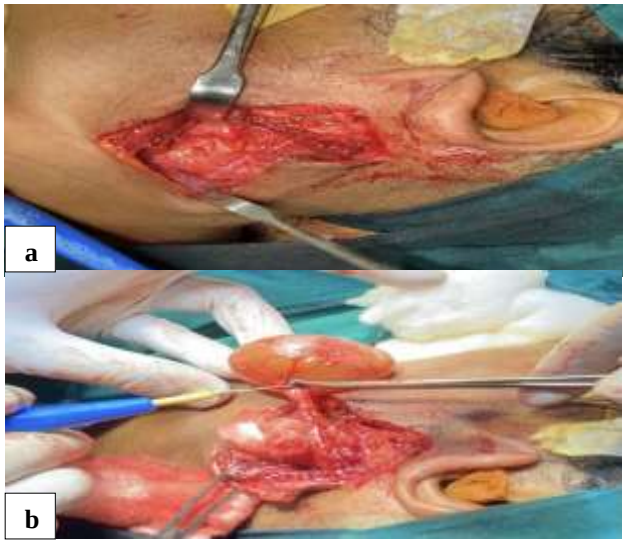

Figure 2: (a) Intraoperative transcervical, and (b) completely excised cyst.

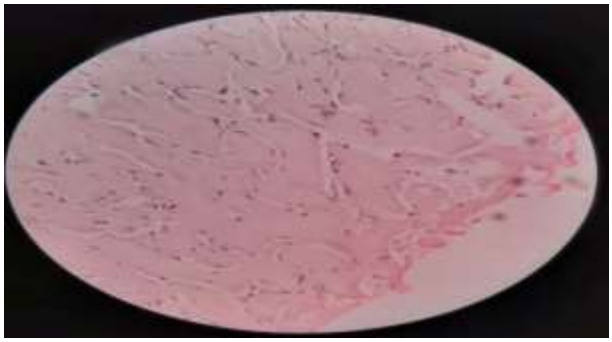

Figure 3: Cyst wall partly lined by tall columnar pseudostratified ciliated epithelium. The wall shows focal dense inflammation.

DISCUSSION

The etiology of branchial cleft cysts is not understood completely. Four main theories have been suggested which include; incomplete obliteration of the branchial mucosa, persistence of vestiges of the pre-cervical sinus, thymopharyngeal ductal origin, and cystic lymph node origin.[7,8] Second branchial cleft cyst is a benign developmental cyst due to the incomplete obliteration of pharyngeal cleft and it is more common than others branchial cleft cyst. Type-I second BCCs are exceptionally rare.

Clinically patient presents with a painless compressible swelling situated at the anterior border of the sternocleidomastoid muscle between the mandibular angle and clavicle. During an upper respiratory tract infection, the patient may complain of swelling that has lasted for a long time with an abrupt increase in size. Infections and inflammation may develop as a result of the secondary infections.[9] Bilateral second branchial cleft cysts have been reported and, in some patients, this is part of the

branchio-oto-renal syndrome (an autosomal dominant disorder).[4]

There is no specific laboratory test is needed for evaluation.[10,11] Diagnosis can be done by imaging Studies. Ultrasonography can be done to determine the cystic characteristics of the cyst.[11] CECT will depict a cystic and enhanced mass in the neck.[12] Magnetic resonance imaging (MRI) can be used for a finer resolution.[13] FNAC is helpful to distinguish a branchial cleft cyst from a malignant neoplasm.[14]

Differential diagnosis includes lymphadenopathy, hemangioma, carotid body tumor, cystic hygroma, ectopic thyroid/salivary tissue, vascular neoplasm/malformation, thyroglossal duct cysts, cat scratch disease, atypical mycobacterial infections, cystic squamous cell carcinoma.[15] The surgical management for second branchial cleft cysts is resection approached by a transverse cervical incision.[4] Careful dissection around the cyst bed and exploration for an associated fistula is required.

In histopathology, the lining of a branchial cyst is generally stratified squamous epithelium but sometimes it is pseudostratified, columnar and ciliated. The connective tissue wall contains abundant lymphoid tissue, which shows germinal centers.[16]

CONCLUSION

Type I second branchial cleft cyst is a rare condition with a significant risk of misdiagnosis. To avert misdiagnosis and surgical complications, thorough investigation must be performed prior to surgical intervention.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Mitroi M, Dumitrescu D, Simionescu C, Popescu C, Mogoantă CA, Cioroianu L, Surlin C, Căpitănescu A, Georgescu M. Management of second branchial cleft anomalies. Rom J Morphol Embryol. 2008;49(1):69-74.
2. Coste AH, Lofgren DH, Shermetaro C. Branchial cleft cyst. StatPearls Publishing, Treasure Island (FL). 2020.
3. Muller S, Aiken A, Magliocca K, Chen AY. Second branchial cleft cyst. Head and neck pathology. 2015;9(3):379-83.
4. Acierno SP, Waldhausen JH. Congenital cervical cysts, sinuses and fistulae. Otolaryngol Clin North Am. 2007;40(1):161-76.
5. Guldfred LA, Philipsen BB, Siim C. Branchial cleft anomalies: accuracy of pre-operative diagnosis, clinical presentation and management. J Laryngol Otol. 2012;126(6):598-604.
6. Magdy EA, Fadali GA, Seif-Elnasr M, Fathalla MF. Unusual Isolated Parapharyngeal Second Branchial Cleft Cyst: A Case Report and Literature Review. Case Rep Otolaryngol. 2020;8814071.
7. Arndal H, Bonding P. First branchial cleft anomaly. Clin Otolaryngol Allied Sci. 1996;21(3):203-7.
8. Glosser JW, Pires CA, Feinberg SE. Branchial cleft or cervical lymphoepithelial cysts: etiology and management. J Am Dent Assoc. 2003;134(1):81-6.
9. Muller S, Aiken A, Magliocca K, Chen AY. Second branchial cleft cyst. Head Neck Pathol. 2015;9(3):379-83.
10. Lee DH, Yoon TM, Lee JK, Lim SC. Clinical study of second branchial cleft anomalies. J Craniofacial Surg. 2018;29(6):557-60.
11. Bansal AG, Oudsema R, Masseaux JA, Rosenberg HK. US of pediatric superficial masses of the head and neck. Radiographics. 2018;38(4):1239-63.
12. Friedman E, Patiño MO, Udayasankar UK. Imaging of pediatric salivary glands. Neuroimag Clin. 2018;28(2):209-26.
13. Brown RE, Harave S. Diagnostic imaging of benign and malignant neck masses in children—a pictorial review. Quantitative Imag Med Surg. 2016;6(5):591.
14. Shen LF, Zhou SH, Chen QQ, Yu Q. Second branchial cleft anomalies in children: a literature review. Pediatr Surg Int. 2018;34(12):1251-6.
15. Patel S, Bhatt AA. Thyroglossal duct pathology and mimics. Insights Imag. 2019;10(1):12.
16. D'Souza AR, Uppal HS, De R, Zeitoun H. Updating concepts of first branchial cleft defects: a literature review. Int J Pediatr Otorhinolaryngol. 2002;62(2):103-9.

Cite this article as: Tambat RM, Golasangi NA, Basavaraj SG, Pandrinath S, Shrestha Y, Moktan JB. Type I second branchial cleft cyst in an adult patient. Int Surg J 2021;8:3217-9.