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Branchial cyst at an unusual location: a rare presentation

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Abstract

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Introduction

Branchial clefts cysts (BCC) are uncommon anomalies of embryonic development encountered frequently by the otolaryngologists. They involve the soft tissue of the neck and manifests as branchial cyst, fistula or sinus. These anomalies represents about 20% of neck masses in children although rare in adults with bilateralism in about 1% cases.[1,2] The branchial cleft anomalies arises from the incomplete obliteration of the branchial tract which results in the formation of branchial cyst (75%) and sinus or fistula tract (25%).[3] These anomalies commonly involves cervical, parotid region and less commonly in mediastinum. Second branchial anomalies are common comprises 95% of all branchial cleft lesions. They are commonly located in neck in relation to sternocleidomastoid muscle (SCM) and carotid sheath.[4] Second BCC are classically seen on anterior border of SCM muscle at the junction of upper 1/3rd and lower 2/3rd of muscle lateral to the carotid space and on the posterior margin of submandibular gland. Many of these lesions may remain unnoticed until infection occurs. We are presenting a rare case of giant branchial cyst in supra sternal space of burn with presentation of asymptomatic progressively increasing mass in neck.

Case Report

A 31 years old female patient reported to our hospital with history of neck swelling since 4-5 years. It was insidious in onset and progressively increasing in size to present size. There was no history of pain, change in voice and difficulty in breathing or swallowing. On examination, ovoid shaped lump of approximately 5X4 cm was present in the suprasternal space of burn which was not moving with protrusion of tongue or swallowing. On palpation, surface temperature was normal and swelling was non tender, cystic, compressible and non pulsatile. The transillumination test was positive. Examination of nose, pharynx and larynx was normal. Radiography of the soft tissue of neck did not demonstrate any abnormality. Ultrasonography of neck revealed cystic lesion of approximately 5X4 cm in space of burn. Lymph nodes were not noted in the field. On axial, contrast enhanced computerized tomography (CECT) reveals well defined non enhancing 5X4X4 cm, homogenous low attenuation mass noted in space of burn between sternal heads of SCM (Fig. 1). There was no evidence of lymphadenopathy in neck. Laryngeal, pharyngeal structures, trachea and vascular structures were normal. Increased signal intensity was due to high protein content or previous haemorrhage. Patient was subjected for surgical excision under general anaesthesia. During surgery, the cyst was free from the vital structures (Fig. 2). Cystic mass was excised intact and surgical site was closed in layers with suction drain in situ. Gross examination of the specimen shows cystic oval shaped mass of 5X4 cm size (Fig. 3). Surgical specimen was sent for histopathological examination and shows cystic swelling lined with pseudostratified ciliated columnar epithelium. Wall of cysts shows fibrocartilagenous and fibro fatty tissue with congested blood vessels and scanty lymphoid aggregates (Fig. 4). Patient was followed up for 2.5 years and no recurrence was noticed.

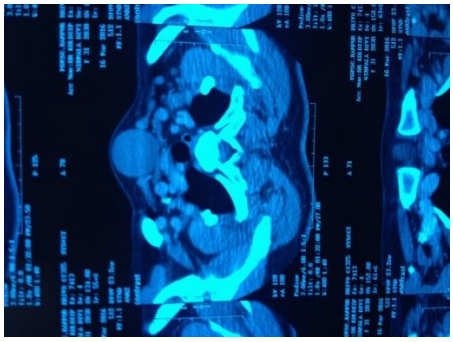

Fig. 1: CT Neck of the patient

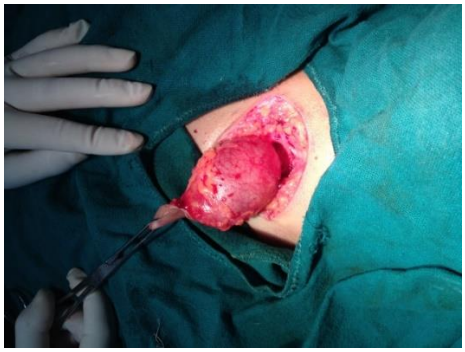

Fig. 2: Intraoperative picture

Fig. 3: Gross specimen of the cyst

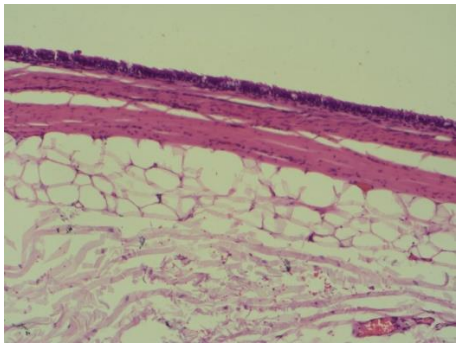

Fig. 4: Histopathological picture

Discussion

The term branchial cyst was first used by Ascherson in 1832 describing its origins from the impaired obliteration of branchial clefts.[5] Branchial arches and the mesenchyma are well recognized by the end of 4th week of embryonic life. The branchial arched are derived from neural crests cell where as mesenchyma is derived from lateral mesoderm. The major head and neck organs are formed during the 5th week of fetal development. Each arch contains connective tissue that becomes bone, blood vessels, cartilage and muscles. Incomplete or failed development of these arches results in several congenital defects in head and neck region.[6] There are several theories of origin of the branchial anomalies including branchial apparatus theory, cervical sinus theory, inclusion theory and thymopharyngeal theory. Among these, most widely accepted theory is branchial anomalies resulting from incomplete involution of the branchial apparatus.[7] Depending upon the anatomical location, branchial anomalies are classified into first, second, third and fourth arch anomalies.

In the present case, patient presented with asymptomatic, progressively increasing swelling in supra sternal region and radiological and histopathological investigations were suggestive of branchial cyst. From investigations and intra operative findings, we could not classify the branchial cyst however based on its location, possibly may have its origin from third branchial arch.

Congenital anomalies of head and neck region are common in pediatric age group and manifests in the form of cystic masses, fistula or discharging sinuses. Cysts are formed as a result of entrapped remnants of branchial clefts or sinuses where as sinuses are remnants of clefts or pouches and fistula results from persistence of both clefts and pouches. The proper understanding of the development of branchial apparatus and related anomalies is important while performing surgery as the vital structures including facial nerve, major vessels of neck and the parotid gland are intimately related to these anomalies. Although congenital in origin, branchial anomalies present late in life. Branchial cysts usually appears in second decade of life where as sinus and fistula present in first decade of life (usually after 5 years of age).[7]

Computerized tomography (CT) is an important investigation to diagnose branchial cyst and its relation to the vital structures of the neck. On CT scan, branchial cyst shows a well defined, homogenous low attenuation, non-enhancing mass. Beak sign may be present pointing medially between the internal and external carotid. Wall thickening and enhancement may be seen which occur due to associated inflammation. CT scan also delineates the infectious process and possible malignant degeneration.[8]

Conclusion

Unusual location and large size of the present case of branchial cyst make this case significantly important and branchial cyst should be considered as differential diagnosis of swellings of supra sternal space of burn.

References

1. Waldhausen J H. Branchial cleft and arch anomalies in children. Semin Pediatr Surg, 2006, 15(2):64–69.
2. Doshi J, Anari S. Branchial cyst side predilection: fact or fiction? Ann Otol Rhinol Laryngol, 2007;116(2):112–14.
3. Deane SA, Telander RL. Surgery for thyroglossal duct and branchial cleft anomalies. Am J Surg, 1978;136:348–53.
4. Bailey H. London, England: Lewis; 1929. Branchial Cysts and Other Essays on Surgical Subjects in the Facio-Cervical Region.
5. Golledge J, Ellis H. The aetiology of lateral cervical (branchial) cysts: past and present theories, J Laryngol Otol, 1994;108(8):653–59.
6. Moore K. The developing human, 3rd edition, Philadelphia, Saunders, 1988.
7. Choi SS, Zalzal GH. "Branchialanomalies: a review of 52 cases." Laryngoscope, 1995 105;9(1):909–3.
8. Coppens F, Peene P, Lemahieu SF. "Diagnosis and differential diagnosis of branchial cleft cysts by CT scan," Journal Belgede Radiologie, 1990;73(3):189–6.