Branchial Cyst in the Neck - Late Presentation: A Case Report with Review of Literature

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ABSTRACT

Branchial cyst typically presents as a unilateral, soft tissue swelling that is located deep to the anterior border of sternocleidomastoid in the lateral aspect of the neck of a child or young adult. It is very essential that an accurate clinical diagnosis and in certain cases appropriate imaging is performed so that definite treatment can be carried out. The authors present the case of a 40 years old female patient, presenting with a right sided cervical swelling of one year duration, gradually progressive in size in the last four months. Computed tomography (CT) scan of the neck suggested a branchial cyst. She was successfully managed surgically without any recurrence. The aim of presenting this case is to highlight the rarity of the branchial cyst as a clinical entity in the differential diagnosis of the lateral neck masses and to emphasize the importance of a proper surgical excision in order to avoid the recurrence in the management of branchial cysts.

Keywords: Branchial cyst, branchial arches, anterior triangle of neck

INTRODUCTION

Branchial apparatus develops between the third and seventh week of embryonic life. There are 5 mesodermal arches separated by invaginations of ectoderm (clefts) and endoderm (pouches). Each arch has its own arterial and nervous supply. Branchial cysts result from failed obliteration of branchial clefts. Second branchial cleft cyst is the most common type, which is found in about 95% of cases (Panchbhai and Choudhary 2012).

Branchial cysts are common in the lateral aspect of the neck. They usually appear as a fluctuant swelling deep to the sternocleidomastoid muscle anteriorly. They are often present in the second and third decade of life. Clinical diagnosis is mandatory. Radiology may also help for proper localization of the cyst. Fine needle aspiration cytology (FNAC) can also facilitate the diagnosis. Excision is the treatment of choice to aid in diagnosis, for cosmetic reasons and to prevent possible infection of the cyst.

Case Report

A 40 year old female patient presented with a solitary swelling in the right side of the neck of one year duration. The swelling was insidious in onset and gradually increased to the present size of 4×3 cm. There was no pain in the swelling. There was no other contributing history. General and systemic examination revealed no other abnormality. On local examination an ovoid solitary swelling with ill-defined margins was found in the right anterior triangle of the neck anterior to the anterior border of sternocleidomastoid. The swelling was smooth, non tender, soft, compressible, nonpulsatile and transillumination test was positive.

On sonography, the swelling was confirmed to be cystic in nature, which was present in the right anterior region of the neck lateral to the right lobe of thyroid gland with no enlarged lymph nodes. On CT scan of the neck, a well-defined,
non-enhancing 4.5×4.5×3.2 cm cystic lesion was noted in the paratracheal region on right side of the neck extending from infrahyoid region to the superior mediastinum. There was no calcification noted in the lesion. The right lobe of the thyroid gland and trachea were displaced anteriorly and carotid vessels were displaced laterally. There was no evidence of lymphadenopathy and no vascular involvement was noted (Figure 1).

The surgical excision of the cyst was planned. Per op, a well-circumscribed unilocular cyst was found adherent to the sternocleidomastoid and right lobe of the thyroid gland (Figure 2). The internal jugular vein, carotid vessels, vagus nerve, hypoglossal nerve and superior thyroid artery were identified and the cyst was dissected out in toto. Histopathological study of the resected specimen revealed that the cyst wall was lined by squamous epithelium. A part of the cyst wall was also lined by columnar epithelium. Sub epithelial stroma showed infiltration of lymphocytes. These findings were suggestive of branchial cyst (Figure 3). The patient was followed up for two years and no evidence of recurrence was observed.
DISCUSSION

Branchial anomalies are usually seen in form of branchial cysts, sinuses, and fistulae. Several theories of origin of branchial cysts are postulated; viz.-

1. Branchial apparatus theory,
2. Cervical sinus theory,
3. Thymopharyngeal duct theory and
4. Inclusion theory.

Hunczovsky in 1785 first described lateral cyst of the neck (Golledge and Ellis 1994). Several theories have been proposed regarding the origin of the branchial cyst. Rathke described pharyngeal pouches in 1828. Later on Ascherson first proposed the “Branchial theory” and subsequently in 1886 proposed “Precervical Sinus Theory”, suggesting that these cysts were related to the cervical sinus rather than the pharyngeal pouches (Golledge and Ellis 1994). King proposed the “Lymph node theory” based on the findings of Lucke and Luschka. Bhasker and Bernier concluded the possible origin of the epithelium within the lymph node forming the lining of the cyst eventually led to the cystic transformation of the node. The extensive literature review suggests the terms “branchial cleft cyst” and “cervical lymphoepithelial cyst” are synonymous (Thomaidis et al., 2006; Glosser et al., 2003; McClure et al., 1998).

The median age of presentation of these cysts is in the third decade. Our case presented in fourth decade. They are found more commonly in females (Titchener and Allison 1989). Classically they have been described to occur anterior to the upper third of sternocleidomastoid [7]. However they have been reported to occur in the other areas of the neck, in the oral cavity, within the salivary glands, the thyroid, in the mediastinum and within the pancreas.

The diagnosis of branchial cyst in classical position is relatively simple. It is difficult to diagnose preoperatively at other sites. Preoperative ultrasonography and FNAC both aid diagnosis (Howard and Lund 2008). CT scan of the neck, not only confirms the diagnosis, but also determines the extent and anatomical relationship with adjacent structures (Bransetter. 2009; Woo and Connor 2007). The total accuracy of CT in the diagnosis of branchial cysts was found to be 90% (Coppens et al., 1990). Magnetic Resonance Imaging (MRI) has certainly more advantage than CT scan for evaluation of branchial cyst but with lower costs and with an easier imaging process CT is preferred very often.

Branchial cysts arising from 2nd branchial arch are usually found deep to the sternocleidomastoid muscle at the junction of its upper 1/3 and lower 2/3. In our case the cyst was smaller in size and was located anterior to the anterior border of sternocleidomastoid. The radiological interpretation suggests the small, well defined, non-enhancing cystic lesion in the paratracheal region extending from infrathyroid region to the superior mediastinum laterally displaced carotid vessels and anteriorly displaced trachea and the right lobe of thyroid gland. Considering the embryogenic origin as well as the clinical and radiological features of the cyst in our case, it was suggested that the cyst was originated from the second branchial arch. By interpreting the embryological basis for these defects, the location and the type of branchial cyst can be better evaluated radiologically [9].

Branchial cleft cysts are most commonly located along the anterior border and the upper third of the sternocleidomastoid muscle in the anterior triangle of the neck, some rare occurrences have been reported in the literature. It is very rare for a BCC to manifest in other locations, especially in the posterior triangle of the neck. However, A S Panchbhai and M S Choudhary have reported a case of branchial cleft cyst of third branchial arch presenting in the posterior triangle of the neck in a 10 years old girl (Panchbhai and Choudhary 2012). A rare case of pharyngeal cyst arising from the second branchial cleft in a 14-year-old boy has been described, which was completely removed by an intraoral approach (Takimoto et al., 1989). Pharyngeal presentation of branchial cleft cyst is very rare. In 1993, Thaler and colleagues reported a case of branchial cleft cyst presenting as oropharyngeal cyst without sinus tract (Thaler et al., 1993). A rare case of second branchial cleft cyst with oropharyngeal presentation was reported (Moo-Jin et al 2002).

Secondary enlargement of the cyst is common during upper respiratory tract infections due to enlargement of lymphoid tissue lining the cyst wall. Depending on its size it can cause dyspnoea, dysphonia, dysphagia and cosmetic deformity.

There are a number of clinical entities, to be considered as differential diagnosis of branchial cysts in the neck, which include thyroglossal duct cysts, cystic hygroma, carotid body tumours, suppurrative lymphadenitis, branchial fistulas or sinuses, dermoid cysts, parotid swelling, tuberculous lymphadenitis, lipoma, neurofibroma, haemangioma, lymphangioma, pharyngeal diverticulum, laryngocele and plunging ranula etc.

Management of branchial cyst is in form of surgical excision, indications of which are to prevent infections and cosmetic reasons. Surgical excision is the definitive treatment of the branchial cyst with no recurrence (Howard and Lund 2008). Recurrences are seen in large retrospective study where the overall recurrence rate was noted to be 4.9% after a 2 year follow-up period (Panchbhai and Choudhary 2012). In our case the patient was followed up for two years.
and there was no recurrence.

CONCLUSION

Branchial cyst presents with similar clinical picture with other pathological swellings of the neck. Thorough clinical and radiological diagnosis is necessary to predict the origin of branchial cyst. Complete surgical excision remains the mainstay of its treatment.

Conflicts of interests

Authors declare that there is no conflict of interest.

REFERENCES