Branchial Cysts in Quito, Ecuador

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Abstract

Introduction Branchial cleft anomalies are the second most common congenital anomaly in children. However, some lesions may not develop clinically and are not diagnosed until adulthood. The recent literature of branchial cysts (BCs) in the adult population is really scanty. For this reason, we analyzed the clinical and surgical management of the adult population treated for a BC at a tertiary care general hospital.

Methods A retrospective review of the clinical records of all the patients with histological diagnosis of BC who were surgically treated at the Social Security Hospital in Quito, Ecuador, was performed. Fifty-one patients (27 women) with congenital anomalies of the 2nd (43 patients with cysts) and 3rd (6 patients with cysts and 2 with fistula) branchial arches were diagnosed and treated. Diagnosis was made on clinical grounds and by computed tomography scan.

Results The 43 patients with a 2nd branchial cleft cyst underwent complete surgical excision through a wide mid-neck transverse cervicotomy. The 6 cases of 3rd branchial cleft cyst underwent surgical resection through a lower-neck transverse incision, and the 2 patients with clinical fistula in the lower aspect of the neck were operated on via an elliptical incision around this external fistula opening. Postoperative evolution was uneventful in all patients.

Conclusions Branchial cysts can occasionally be diagnosed in adult patients in the setting of a general hospital population. A correct clinical and imaging assessment was diagnostic in most patients. Complete surgical resection was curative in all our patients, and postoperative complications were exceptional.

Introduction

Branchial anomalies comprise ~ 20% of pediatric congenital head and neck masses, making them the second most common, preceded only by thyroglossal duct cysts.1 Conversely, they are uncommon in adults. Although the term branchial anomaly encompasses first, second, third, and fourth branchial cleft cysts, sinuses, and fistulae, all are thought to result from a similar embryologic error: incomplete obliteration of the branchial apparatus during embryogenesis.2

Three different clinical presentations are recognized: cysts, sinuses, and fistulae.3 When a pouch or groove fails to obliterate, it may communicate with either skin or mucosa of the upper airway, forming a sinus. When both a pouch and a groove fail to obliterate, they may form a communication between the skin and mucosa, which is termed a fistula. When a branchial groove remnant forms an epithelial-lined space without communication to the skin or mucosa, a cyst is formed.1 Cystic neck lumps are a diagnostic challenge for the head and neck
surgeon. Preoperative differential diagnoses include thyroglossal duct cyst, cervical lymphadenitis, cervical abscess, toxoplasmosis, tuberculosis, dermoid, dermal inclusion cyst, hydatid cyst, lymphangioma, and malignant neoplasm.

The recent literature of branchial cysts (BCs) in the adult population is really scanty. For this reason, we analyzed the clinical and surgical management of patients in this age group treated for a BC at a tertiary care general hospital.

Methods

A retrospective review of the clinical records of all the patients with histological diagnosis of BC who were surgically treated between 1990 and 2015 at the department of otolaryngology – head and neck surgery of the Social Security Hospital in Quito, Ecuador, South America. Was performed during this period, 51 patients (24 men, 27 women) with congenital anomalies of the 2nd (43 patients with cysts) and 3rd (6 patients with cysts, and 2 with fistula) branchial arches were diagnosed and treated. The mean age of the patients was 31 (range 4–60). Forty-eight patients (94%) were adults, and only 3 were under 18-years old. The preoperative diagnosis was based on history, clinical examination, and radiology reports. Forty-nine patients (96%) presented with lateral neck soft swelling; among them, 43 (Fig. 1) were located cranially and only 6 in the lower neck (levels IV and VB). Two patients presented with fistulae in the lower neck. Symptoms appear on Table 1; lesions were asymptomatic in 47 (92%) patients. The mean length of time from onset of tumor or symptoms was 13.8 months. Clinical diagnosis was BC in 42 cases (82%), inflamed BC in 4 (8%), branchial fistula in 2, malignant lymph node in 2, and cystic hygroma in 1 case. Twenty-eight lesions (55%) were located on the left side, 22 on the right side and 1 medially, above the sternal notch.

Fine needle aspiration (FNA) biopsy was performed in 18 patients (35%) with cystic lesions. It was diagnostic in 15 cases (83%).

Among the imaging studies performed, ultrasound (US) report was correct in 7 (76%) of 26 patients, computed tomography (CT) report in 20 (95%) (Fig. 2) of 21, and magnetic resonance imaging (MRI) report in all 4 patients in whom these studies were performed. Fistulography was performed in the two patients with lower neck fistula.

Results

The 43 patients with a 2nd branchial cleft cyst underwent complete surgical excision through a wide mid-neck transverse cervicotomy incision under general anesthesia with orotracheal intubation. These lesions were located superficial to the anterior border of the sternocleidomastoid muscle or adjacent to the carotid sheath (Fig. 3). We did not have any case of cyst located through the carotid bifurcation or deep into the carotid sheath. A lower neck transverse incision was the...
approach used to operate on the 6 patients with 3rd branchial cleft cyst. The two patients with clinical fistula in the lower aspect of the neck were operated on via an elliptical incision around this external fistula opening. The tract was injected with methylene blue; the fistula extended through the carotid bifurcation up to the pharyngeal constrictor muscles, and it was completely resected. An aspiration drain was left in place for 48 hours. Prophylactic antibiotic was given for 24 hours to all patients, with the exception of the 4 patients with clinical diagnosis of abscessed branchial cyst to whom a complete antibiotic treatment was given.

Postoperative evolution was uneventful in all patients. One patient developed a mild fibrosis under the scar. Histological study of all the lesions reported a characteristic BC. No recurrences occurred during a mean follow-up of 7 (range 0.3–18) years.

**Discussion**

In 1832, Ascherson described the first BC and suggested that this resulted from the impaired obliteration of the branchial cleft or pouches.

Branchial cleft anomalies are the second most common congenital anomaly in children. However, some lesions may not develop clinically and are not diagnosed until adulthood. The recent literature of BCs in the adult population is really scanty, and we found only one review and some case reports. The majority of cases in adults arise between the ages of 20 and 40 years old, but in older patients branchial cleft cysts are a diagnostic challenge because of the possibility of cystic metastasis from occult squamous cell or papillary thyroid carcinoma.

As our study was made with patients from a tertiary general hospital, most of them (92%) were adults. The mean age in our series is similar to the 32 years reported by Guldfred.

Among 113 2nd arch BCs reported by Agaton-Bonilla, 76% were located on the left side, but among the 62 cases of second branchial cleft anomalies reported by Bajaj, 34 were located on right side and 12 were bilateral. We had left side predominance but no case of bilateral lesions.

Gender distribution seems similar for both males and females. However, a few authors have reported higher incidence in either men or women. We found slightly more females than males in our series.

Branchial cysts are often lined with squamous epithelium, whereas sinuses and fistulae are more likely to be lined with ciliated, columnar epithelium. Lymphoid tissue, sebaceous glands, salivary tissue or cholesterol crystals in mucoid fluid within the cysts can be seen. Squamous cell carcinoma within the cyst can be found in adults, but it seems to be extremely difficult to differentiate a primary lesion from a metastatic lesion from an occult primary.

Second arch BCs appear clinically as a solitary, painless, lateral swelling in the upper neck, while third and fourth anomalies are found lower in the neck.

They appeared inflamed in 10% of cases, which is similar to our 8% rate. However, rates ranging from 23 to 35% have been reported. When the cysts are infected, a history of intermittent swelling and tenderness is present, such as sore throat, upper respiratory tract infection, or dental infection.

Branchial cleft diagnosis depends on good history taking and examination as well as a high index of clinical suspicion. In patients with cysts, US is the first reliable imaging technique, but CT and MRI are useful to confirm the diagnosis and define the extent of the lesion. When infected, the cyst wall or tract tends to become thickened and irregular, and it is enhanced with intravenous contrast. Magnetic resonance imaging has an excellent soft tissue detail.

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recurrence in our series. Our patients belonged to the National Ecuadorian Social Security System in which follow up is free and they could be attended whenever they needed.

Complete (58–61%) or partial (25–70%) regressions of BC have been obtained with sclerotherapy using OK-432 injections, with greater success in unilocular cysts when compared with multilocular.26,27

Conclusions

Branchial cysts can occasionally be diagnosed in adult patients in the setting of a general hospital population. Complete surgical resection was curative in all our patients, and postoperative complications were uncommon.

Conflicts of Interest

The authors have no conflicts of interest to declare.

References