

Giant benign mass of the lateral neck: a case report

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Abstract

We report the case of a woman aged 32 years with no medical history, who presented to the Department of Oral and Maxillofacial Surgery in Timisoara, Romania, accusing pain, right lateral cervical swelling and difficulty in head movements, due to the presence of a giant lateral cervical mass, which had a rapid growth during the last six months. During anamnesis, it was difficult to determine whether the initial location was anterior or posterior to the sternocleidomastoid muscle. CT images showed a homogeneous, well-defined cystic tumor, which compressed surrounding tissues. Pre-surgical image investigations received were digitally processed and showed the origin of the mass on the anterior margin of the sternocleidomastoidian muscle. Histopathological examination confirmed the clinical diagnosis of branchial cyst. The treatment was surgical, carried out under general anesthesia through oral intubation and consisted of cystic enucleation, followed by restoration of normal functions.

Keywords: giant branchial cleft cyst, lateral cervical, histopathology, surgical treatment.

Introduction

Congenital malformations of the lateral neck are rare but interesting group of masses that are typically present in the second and third decades of life.

They may occur as non-inflammatory cervical masses or remain unnoticed until infection occurs. Mostly, these lesions arise from the fetal branchial system, which results in an array of branchial cysts, and fistulae [1].

Lateral cervical branchial cleft cysts are most commonly found in young adults. They can reach considerable sizes and usually lack in symptoms. They are the second most common lesions to arise in the neck because of congenital anomalies. Usually, we find a round neck mass located along the anterior border of the sternocleidomastoid muscle, which is smooth and painless. The evolution is stagnant for many years but may acutely change by increasing in size after upper respiratory infections. Differential diagnosis is made against all possible lateral cervical masses of benign or malign nature [2, 3].

Treatment is surgical and necessitates excision of the lesion, including external tracts to the skin or internal tracts to the aerodigestive system [4, 5].

Patient, Methods and Results

We present the case of a 32-year-old woman to demonstrate the character of slow, expansive and painless growth of a lateral cervical mass, over a period of about two years. The woman with a right lateral cervical tumor causing breathing, phonetic and masticatory difficulties was hospitalized in the Clinic of Oral and Maxillofacial Surgery, "Victor Babeș" University of Medicine and Pharmacy, Timișoara, Romania, in 2008. The lateral cervical tumor initially observed by the patient as a node, two years before presenting to a doctor, has increased dramatically in volume during the last six months, distorting the right side of the neck.

The patient decided to go to the doctor only when spontaneous pains occurred, especially caused by neck movements, antalgic limitation of neck movements and local tension.

The clinical examination shows a massive deformation of the lateral cervical region, about 14 cm in diameter, located on the right, asymmetrical, with skin coverings unchanged in appearance and color, slightly spontaneously painful but very painful on pressure (Figure 1).



Figure 1 – Clinical aspect of the branchial cyst.

On palpation, the consistency is soft and leaves no pressure well. It is found that the tumor is well demarcated, but volitional *versus* lateral cervical structures. This case is of interest because of the considerable size and difficulties consecutive to surgical removal [6, 7].

Clinical examination was completed with imaging examination consisting of cervical ultrasound and CT [5, 8, 9]. For diagnosis guidance, cytological puncture was performed and the surgically excised piece was examined histologically in the postoperative phase.

The surgery (Figure 2) was carried out under general anesthesia with endotracheal intubation. For this, the usual blood tests, chest X-ray and cardiology examination with cross heart ultrasound and digitally interpreted ECG were performed [5].

Postoperative evolution went smoothly under antibiotic protection and effective suction drainage. At six weeks postoperatively, the patient is cured, with complete morphofunctional restoration.

Computerized tomography (Figure 3) shows a homogeneous ovoid cystic formation located in the lodge of major vessels of the neck, both before and behind the sternocleidomastoid muscle, well defined, without affecting the surrounding tissues.

Increased signal intensity of cyst formation is due to protein residues, superinfection or previous hemorrhage. Computed tomography images were digitally processed

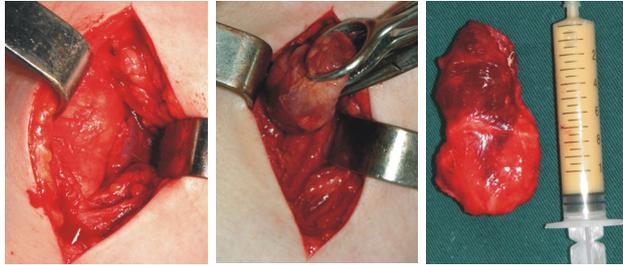


Figure 2 – Surgical aspects of the branchial cyst (relations, dimensions, filling).

to identify the outline of different anatomical elements. This is the first step in the digital processing of two-dimensional computed tomography images.

Histopathology paraffin exam established the correct diagnosis of lateral cervical branchial cyst. Histologically, the cyst is covered by a stratified squamous epithelium, resting on a lymphoid support with lymphoid follicles showing germinal centers (Figure 4).

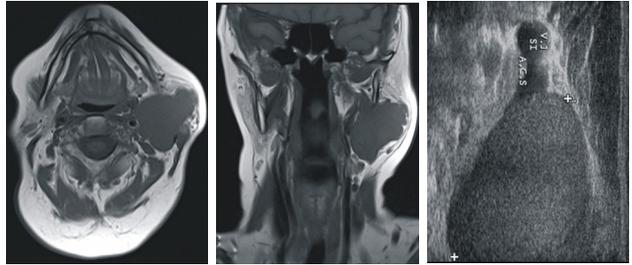


Figure 3 – Imaging aspects (CT and echography).

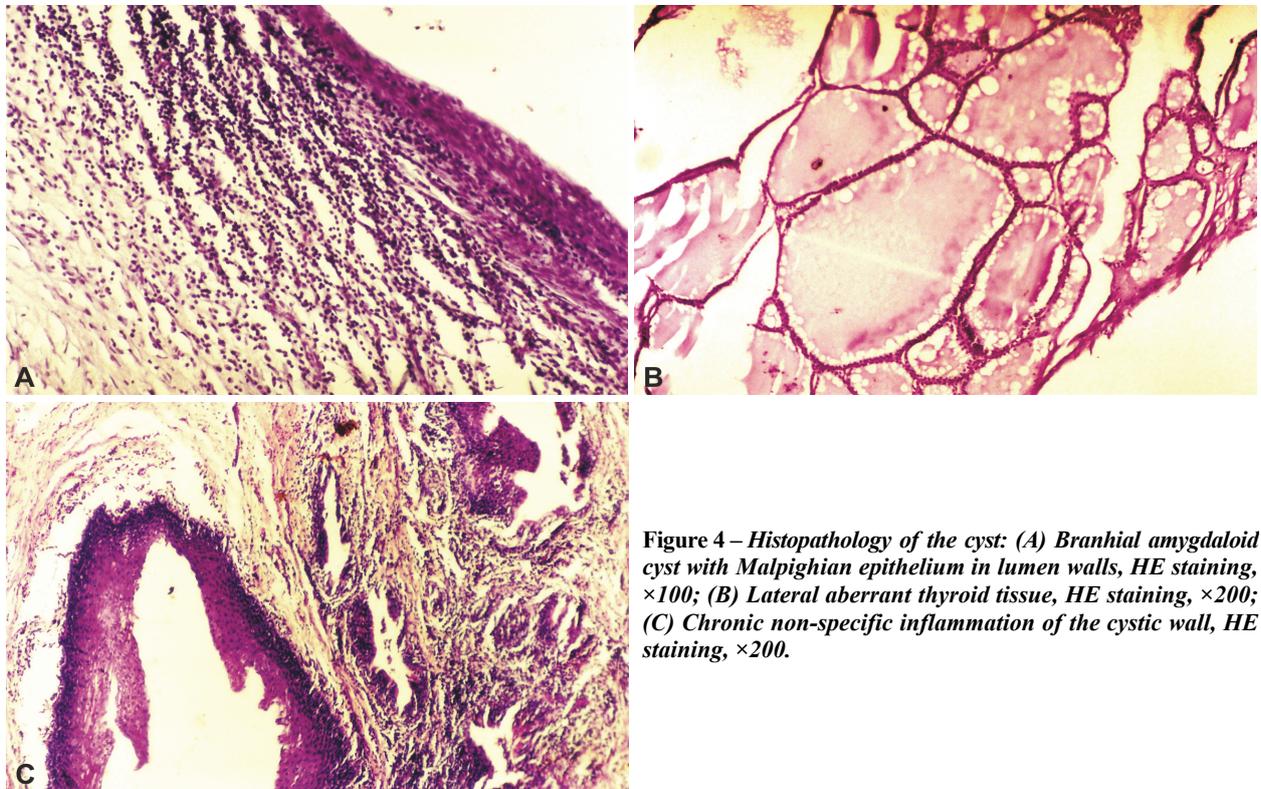


Figure 4 – Histopathology of the cyst: (A) Branchial amygdaloid cyst with Malpighian epithelium in lumen walls, HE staining, $\times 100$; (B) Lateral aberrant thyroid tissue, HE staining, $\times 200$; (C) Chronic non-specific inflammation of the cystic wall, HE staining, $\times 200$.

Branchial cyst cytology is dominated, on the smears/surface biopsy obtained by needle aspiration, by squamous or glandular appearance epithelial cells, very rare mitoses without suggesting a malignant lesion. The surface biopsy in case of branchial cysts shows numerous small lymphocytes. The cytological differential diagnosis is performed with lymph node metastases, adenocarcinoma regions, Warthin's tumor, thyroglossal cyst. The latter highlights glandular type cells, with eccentric nucleus, activated red blood cells and macrophages. Carcinomatous transformation of the cyst is rare and it is cytologically represented by masses of epithelial cells with papillary layout and viscous content.

Discussion

Branchial cysts are rare lesions caused by the retention

of germinal epithelium during the development of branchial arches, especially the second branchial arch [10].

Although present at birth, these types of formations occur more frequently in patients between 11 and 38 years, but may be encountered at other ages also. There is no gender predilection.

Preoperative imaging investigations provide important diagnostic and anatomy information regarding the patient's therapy management.

Malignant transformation is discussed, some authors consider isolated lateral cervical squamous cell carcinoma as a "malignant branchioma" but it may also be the metastasis of a clinically latent carcinoma of upper aerodigestive region. According to some authors, the combination of coating epithelium with a lymphoid support would have been caused by cystic degeneration or by cysts of intranodal inclusion [11, 12].

Anatomical classification is useful for the surgical approach. In our opinion, however, the size of the tumor, its relation to the surrounding anatomical elements and the presence or not of infectious complications is determining. Clinically, the cysts are painless formations that grow slowly and develop asymptomatic until they are noticed by the patient or his entourage. They have a liquid consistency, are soft and well encapsulated, without associated lymph adenopathy.

Because of the relatively rare incidence, differential diagnosis is not always easy. It includes: thyroglossal channel cyst, necrotic lymph node metastasis, lymphadenitis, cystic lymph nodes, neurofibroma or schwannoma; cervical dermoid cyst and thyroid nodule cyst [1, 2, 13, 14].

In terms of diagnosis, imaging investigations carried out were able to make the difference between alternative diagnoses, which have been taken into account. Ultrasound showed that it is a cystic formation located in the great vessels lodge of the neck. Computed tomography instead gave us images that allowed digital processing [9, 15]. We identified the outlines/perimeters of different anatomical elements near cystic formation and could thus establish both the cyst's reference/relation to the external carotid artery and internal jugular vein and the extension of the tumor formation towards the submandibular lodge and behind the sternocleidomastoid muscle.

From surgical point of view, the difficulty of the case stemmed from the impressive size of the tumor but especially from its posterior extension beyond the sternocleidomastoid muscle belly, in the immediate vicinity of the vagus nerve [16]. Also, the problem related to the distortion of the upper airways with consequences in the patient's intubation occurred.

Note that, although asymptomatic in the first phase, spontaneous pain and symptoms caused by head movements and shortness of breath were crucial in presenting the sick to the doctor and in the decision to start immediate surgery. The occurrence of symptoms was sudden and was due to superinfection of the cystic content.

☐ Conclusions

The optimal surgical approach may be difficult, at least in case of large tumors. The location of the cystic tumor in relation to the sternocleidomastoid muscle is very important in the planning of surgical treatment. The exact location of the cysts in relation to surrounding anatomic formations can be established using outline detection and three-dimensional reconstruction software. Surgical excision is the treatment of choice of the branchial cyst. The recurrence rate is low. Fibrous capsule surround-

ing the cyst makes it easy to enucleate it, even with the finger. The choice of investigation methods to clarify the differential diagnosis should aim primarily the patient's exposure to as few harmful radiations as possible but must also take into account the optimal cost-benefit ratio that brings maximum relevant information with minimum financial effort.

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