

Second Branchial Cleft Cyst-A Case Report

Dr. Shaik Nida Hafsa¹, Dr. Nagaraj B T²

¹Junior Resident, Department of ENT, MVJ Medical College and Research Hospital, Bangalore, India

²Professor, Department of ENT, MVJ Medical College and Research Hospital, Bangalore, India

Abstract: Branchial cleft cysts are common congenital head and neck masses predominantly presenting in a pediatric setting. This report describes a 32-year-old female with swelling on the right lateral aspect of the neck, which expanded slowly but progressively. The clinical suspicion was that of a branchial cleft cyst. Sonography revealed a homogeneously hypo- to anechoic mass with well-defined margins and no intralesional septa. Color Doppler reviewed no internal vascularization. The ultrasound examination confirmed the clinical diagnosis of a second branchial cleft cyst, demonstrating the cystic nature of the mass and excluding the presence of complications. The patient was then submitted to excision. The pathology exam revealed features of a benign cyst. Post-operative evaluation was satisfactory.

1. Introduction

Branchial anomalies are the results of altered development of the branchial apparatus during embryogenesis, between the second and sixth–seventh weeks of fetal life. The persistence of branchial remnants can lead to the development of cysts, sinuses, fistulas, or islands of cartilage [1]. Anomalies of the second branchial cleft are the most frequent cause of neck masses of this type: they account for approximately 90 % of all cases [2]. Although the masses are congenital, they are usually identified only in the second to fourth decades of life, when they become enlarged secondary to infection or rupture. They are seen with equal frequencies in males and females [3]. The preoperative diagnosis is based on clinical and radiological findings, which are also important for establishing the spatial characteristics of the lesion with precision. Ultrasonography is the first-line imaging method of choice for defining the benign, cystic nature of the lesion [1].

2. Case Report

The patient was an asymptomatic 32-year-old woman with an unremarkable medical history. She was seen by our staff for swelling in the right side of the neck, which had

appeared approximately 1 year earlier and increased progressively in volume since then. The physical examination revealed a circumscribed mass that moved freely along the anterior margin of the upper third of the sternocleidomastoid muscle. Ultrasonography showed an expansive mass measuring approximately 4.9 x 5 cm, which was uniformly hypo- to anechogenic with well-defined margins, no internal septa, and no evidence of infiltration (Fig. 1a). The color-Doppler examination showed no pathological intralesional vascularization (Fig. 1b). These findings confirmed the suspicion of a branchial cleft cyst, and an MRI examination was scheduled prior to the surgery. The content of the cystic lesion was hyperintense in T2-weighted sequences and mildly hyperintense in T1-weighted sequences. There was no contact with the parotid gland, but the mass caused anterior displacement of the submandibular gland, lateral displacement of the sternocleidomastoid muscle, pressure on the vascular bundle and compression of the jugular vein (Fig. 2). The patient was then submitted to excision. The pathology exam revealed features of a benign cyst. Post-operative evaluation was satisfactory. This report is being published with the written informed consent of the patient.

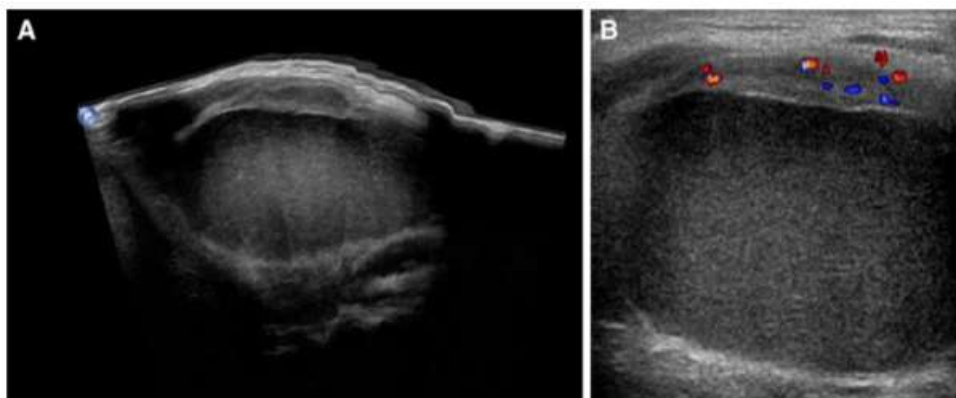


Figure 1: Sonographic examination of the mass on the right side of the neck: a panoramic view reveals a hypo-anechoic oval-shaped lesion with well-defined margins. The cystic nature of the lesion is reflected by the posterior enhancement; b color Doppler imaging of the same mass demonstrates the absence of pathological intralesional vascularization

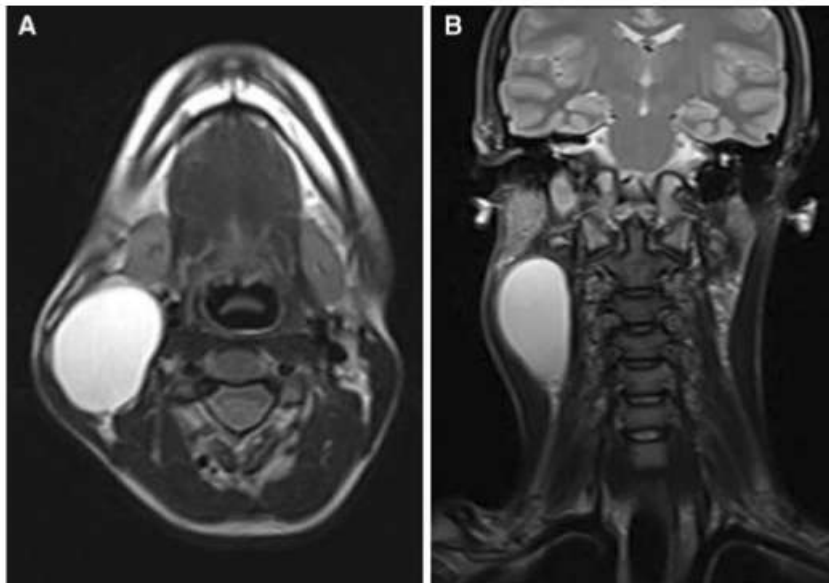
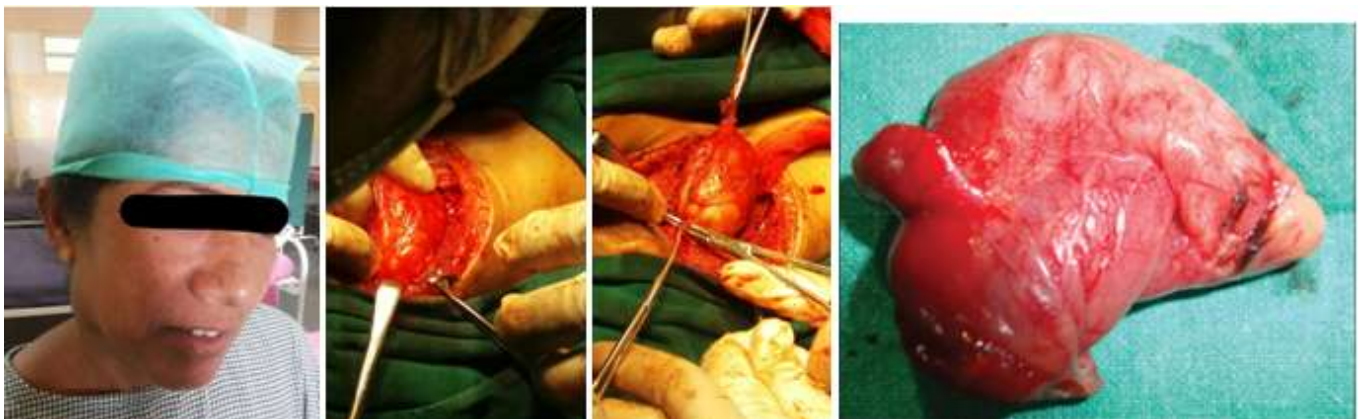


Figure 2: Magnetic resonance imaging: a axial T2-weighted image showing the right-sided cervical mass with hyperintense content, well-defined margins, and no evidence of infiltration of the surrounding structures. The mass lies lateral to the carotid space (compressed medially) and posterior to the submandibular gland (displaced anteriorly); b coronal T2weighted image: the lesion lies anterior to the sternocleidomastoid muscle and has no contact with the parotid gland



3. Discussion and Conclusions

The vast majority (90 %) of branchial malformations arise from the second cleft. They can be bilateral and the present as soft, mobile, asymptomatic masses covered with normal skin. They are generally located along the anterior edge of the sternocleidomastoid muscle although they can develop anywhere along the course of second branchial cleft fistulae, from the skin on the lateral region of the neck, between the internal and external carotid arteries, to the palatine tonsils [3]. They grow slowly over periods of weeks to years. Depending on the size (which ranges from 1 to 10 cm) and location, they can produce local symptoms such as dysphagia, dysphonia, dyspnea, and stridor. The cysts can become painful or tender secondary to infection, with suppuration and fistula formation. They contain a viscous, turbid, yellow-green liquid with cholesterol crystals in the sediment. The walls are thin and coated with the stratified squamous non-keratinized epithelium that covers the lymphoid tissue. The differential diagnosis includes parapharyngeal masses, such as enlarged lymph nodes, parotid masses, paragangliomas of the vagus nerve. Because the cysts are superficial, sonography is the firstline imaging method of choice for diagnosing these lesions. It is non-

invasive, rapid, low-cost, and does not entail exposure to ionizing radiation. In addition, it clearly depicts the cystic nature of the mass and any complications that may have developed. Sonographically, second branchial cleft cysts present as round-oval, hypo- to anechoic masses with well-defined margins and thin walls, which compress the surrounding soft tissues. The mass is compressible and exhibits posterior wall enhancement. In the presence of infections or abscesses, the content of the cyst may become inhomogeneous with a corpuscular appearance [4]. On computed tomography, these lesions typically appear well-circumscribed and, in the absence of complications, they are uniformly hypodense with thin walls; wall thickness may increase after an infection. The cyst generally causes posteromedial displacement of the sternocleidomastoid muscle and the vessels of the carotid space and anterior displacement of the submandibular gland [5]. Magnetic resonance imaging provides better depiction of the deep extent of the cyst and a more precise preoperative assessment. The content of the cysts varies from hypo- to isointense (relative to the muscles) in T1-weighted sequences; it is hyperintense in T2-weighted sequences. The presence of an inflammatory process is often reflected by thickening and increased enhancement of the walls, which

resembles an abscess or lymphadenopathy [6]. Fine-needle aspiration cytology is useful (albeit invasive) for reaching a preoperative diagnosis. The cytological criteria are: yellow, pus-like fluid, keratinized anuclear cells, squamous epithelium, and a matrix of amorphous debris. Surgical excision is currently the treatment of choice.

4. Conflict of interest

None

References

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