Rare Location of a Dermoid Cyst in the Parotid Gland: A Case Report

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Abstract: Dermoid cyst of the parotid gland is a lesion composed of benign tissues of ectodermal and mesodermal origin. Although a dermoid cyst can be encountered across nearly all sites of the body, its location in the head and neck area is quite uncommon and even more unusual inside the parotid gland. We present a case of a patient with gradually enlarging tumour in her right parotid gland who underwent surgical removal of the tumour histologically corresponding to a dermoid cyst.

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Introduction

Dermoid cyst inside the parotid gland is a rare finding with only a few cases reported (Moody et al., 1998; Naujoks et al., 2007; Islam and Hoffman, 2009; Tas et al., 2010; Gonzalez-Perez and Crespo-Torres, 2013; Damar et al., 2015; Glaas et al., 2017; Dwivedi et al., 2019; Yang, et al., 2020). This benign lesion comprises of epidermal and dermal elements entrapped ectopically in deeper tissues. It typically manifests as a painless tumour that generally poses a problem only due to its enlarging volume. In the management of patients with dermoid cysts, multiple diagnostic approaches are available, such as ultrasonography, computed tomography and magnetic resonance imaging (USG, CT, MRI) (Morón et al., 2004; Sabhalok et al., 2016). The curative method is surgical removal of the cyst. We present a case of a woman who was treated by right extracapsular dissection of the parotid gland with a brief discussion on the management of patients with this condition.

Material and Methods

A 40-year-old female noticed a gradually enlarging tumour in the area of her right parotid gland in the course of 2 months. She has never had trauma, nor underwent any surgical procedure in the area of head or neck, had no fever, other swellings, salivatory or neurological disorders. The patient had a medical history of subclinical hypothyroidism in Hashimoto thyreoiditis and chronic venous disease of lower extremities, without any prescribed medication.

On palpation, there was a soft, painless, sharply demarcated tumour of 4×2 cm in the caudal part of the right parotideomasseteric region, without pathological changes on the overlying skin. On USG examination, a slightly lobed, hypoechogenic, homogenous, intraparotid formation with dimensions up to 5×2.5 cm was detected,

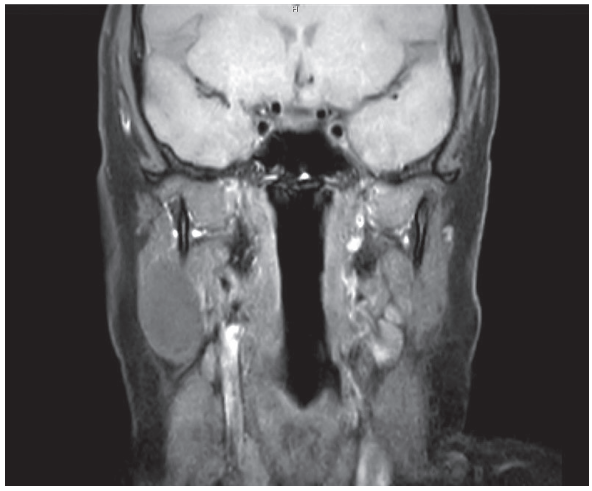

Figure 1 – Coronal magnetic resonance imaging view of the lesion in T1.

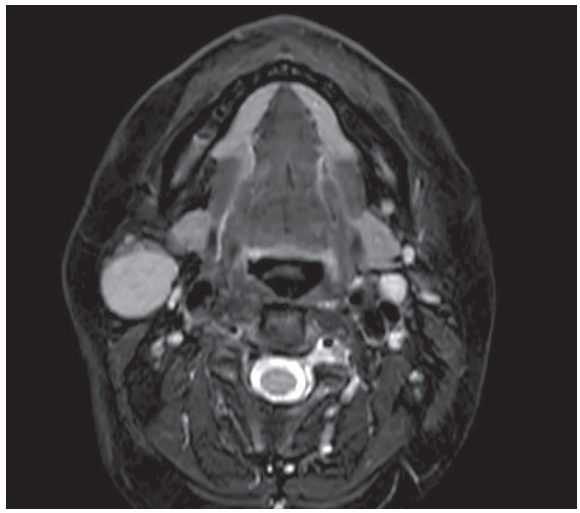

Figure 2 – Axial magnetic resonance imaging view of the lesion in T2.

without obvious signs of vascularization. Additionally, there was a single enlarged lymph node underneath the right parotid gland. Other visualized lymph nodes were of normal size. The thyroid gland was of normal size, without conspicuous pathological findings. The patient had an MRI scan which showed an oval, slightly irregular, T1 hypointense and T2 hyperintense structure of a relatively homogenous signal in the central part of the right parotid gland (Figures 1 and 2), with size of 26×25×40 mm, sharply demarcated from the surrounding tissues. In the caudal part ventrally, there was a small zone of hyperintensity. Other salivary glands were without significant findings.

Results

The patient underwent surgery under general anesthesia – right extracapsular dissection of the parotid gland, level II. The tumour was of semi-soft consistency, on cut section with a thin capsule and pale yellow, soft, dough-like content (Figures 3 and 4). On histology, the cyst was embedded in fat tissue of the parotid gland, its capsule was composed of connective tissue with sparse to moderate lymphocytic infiltrate and scarce capillaries. The lumen was lined by regular, focally atrophic squamous epithelium with keratinization on the luminal side and with numerous sebaceous glands inside the epithelial layer (Figure 5), with keratin-like material inside the lumen of the cyst, which is consistent with the diagnosis of a dermoid cyst.

After the surgery, the patient had mild transient signs of weakness of muscles innervated by ramus marginalis mandibulae of the facial nerve. Otherwise, the postoperative period was uneventful.

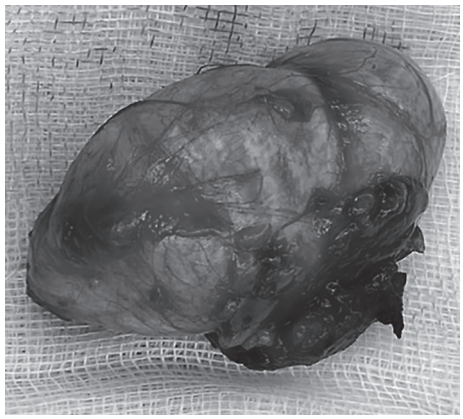

Figure 3 – The intact dermoid cyst postoperatively.

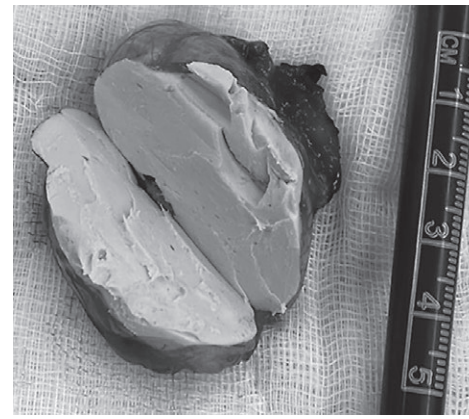

Figure 4 – The dermoid cyst cut in the longitudinal axis.

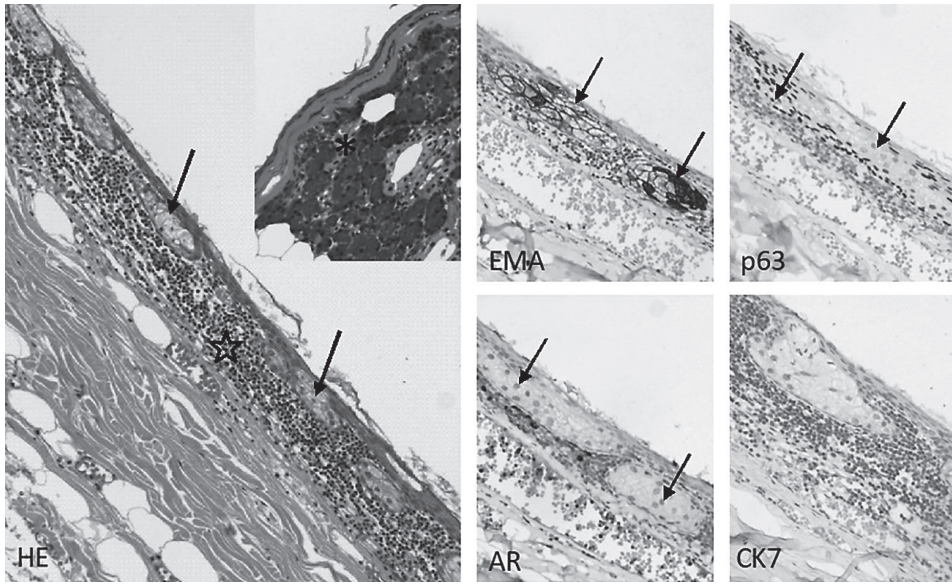

Figure 5 – Histological findings of a cyst in glandula parotis (*) lined with regular squamous epithelium, focally atrophic (insertion), elsewhere with sebaceous differentiation (arrow) and subepithelial lymphocytic infiltration (star). Sebaceous gland differentiation shows positivity of epithelial membrane antigen (EMA), androgen receptor (AR) and partially p63; cytokeratin 7 (CK7) is not expressed. Hematoxylin and eosin (HE); immunoperoxidase, diaminobenzidine, 100×.

Discussion

Dermoid cyst is a benign lesion that can occur in virtually any part of the body with adjacency to the skin. These cysts are composed of cells of ectodermal and mesodermal origin that are entrapped in deeper tissues either during the embryonic

or fetal development (congenital cysts), or in postnatal life (acquired cysts). In the parotid gland, they are believed to form due to either entrapment of cells during closure of embryonic branchial arches, or as a result of impacted epidermal and dermal cells into deeper layers of tissues. When fully developed, they contain squamous cells, often with keratin, and dermal structures such as hair follicles, sebaceous or sweat glands. The distribution of occurrence across the body is diverse with only approximately 7% of them being reported in the head and neck region (Sabhalok et al., 2016). The frequency of incidence in the head and neck area is 49.5% in the orbit, 23% in submental and submaxillar region, 12.6% in the nose and 14.6% in other locations (Yigit et al., 2015). However, the presence of a dermoid cyst in the parotid gland is uncommon, with only several cases published in the literature (Shakeel et al., 2014; Yigit et al., 2015; Glaas et al., 2017; Dwivedi et al., 2019; Yang et al., 2020).

In the process of diagnostics, there are several modalities that can be used in order to ensure the correct management of the patient. Ultrasonography is the most accessible, cheap and non-invasive method and is mainly used in distinguishing between solid and cystic lesions and evaluation of the presence of blood vessels. Both CT and MRI can visualize the content of the cyst and are used to give a complex detailed overview of the terrain of the lesion. The CT attenuation varies depending on the composition of the content of the cyst, typically showing fat attenuation in the dermoid cysts. On MRI, the dermoid cyst content shows hypointensity on T1-weighted images and hyperintensity on T2-weighted images, and hence these cysts can be misdiagnosed as a lipoma (Morón et al., 2004; Dwivedi et al., 2019). Another approach is the use of fine-needle aspiration cytology (FNAC), although its results can be deceptive and opinions on its use are controversial. In context with all other diagnostic methods, it can provide helpful information leading towards the correct diagnosis (Baschinsky et al., 1999). Commonly the aspirated material contains keratin, squamous cells and occasionally hair (presence of which discerns it from epidermoid cyst on FNAC).

Despite their crucial importance in the process of diagnostics, none of the mentioned methods can identify a dermoid cyst with absolute certainty, as all mentioned structures and appearances can be seen in other types of teratomas and even in malignant tumours, such as well differentiated squamous cell carcinoma and carcinomas with squamous metaplasia (Yigit et al., 2015). Thus, the definitive diagnosis should always be made by histopathological examination of the resected specimen.

For the surgery, the recommended approach is partial or total parotidectomy with complete resection of the cyst, with sparing of nerves where possible. In the case of an incomplete resection, there is a high chance of recurrence of the cyst. From all the reported cases of dermoid cysts inside a parotid gland, only a few (Damar et al., 2015; Dwivedi et al., 2019; Yang et al., 2020) were treated by isolated excision of the cyst, in the rest of the cases either partial or total parotidectomy was performed

(Yigit et al., 2015; Glaas et al., 2017; Yang et al., 2020). In this case, the patient was treated by right extracapsular dissection of the parotid gland, level II.

Conclusion

Despite the paucity of reported cases, the diagnostics of dermoid cyst of the parotid gland has been well established, with all modalities bringing valuable information for the surgical plan. All authors of the articles regarding the dermoid cysts of the parotid gland agree on the importance of the final histopathological examination of the resected specimen in order to provide the correct diagnosis.

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