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Oncocytoma of The Parotid: A Rare Entity

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1. Abstract

Oncocytoma is a rare, benign salivary gland neoplasm composed of oncocytic cells abundant in mitochondria. Microscopically, the presence of oncocytes is the hallmark of this lesion. Oncocytic cells are large polygonal cells having abundant eosinophilic granular cytoplasm, and round central to eccentric nucleus. In this article, we are discussing a rare case of oncocytoma in a thirty-seven-year-old female with a swelling in the right parotid region. We highlight the importance of careful histopathological examination for diagnosing these entities.

2. Introduction

Oncocytomas are infrequent benign salivary gland tumors which account for less than 2% of all salivary gland neoplasms. These tumors are most commonly seen arising in the parotid gland and have a predilection for elderly females in the sixth to eighth decade of life. The microscopic picture is usually diagnostic of these lesions which are composed of polygonal cells with eosinophilic cytoplasm made up of abundant mitochondria and dark central to eccentrically located nuclei [1-3]. The Greek word "onkousthai" meaning "increase in bulk is the originator for the word 'oncocyte'. These Oncocytic cells were first described by Hurthle in the year 1894 in the thyroid gland of a canine [4, 5]. Schaefer first described the term "oncocytoma" to describe "granular swollen cells" in ducts and acini of salivary glands. In 1931, Hamperl reported oncocytomas in numerous glandular structures including major salivary glands, thyroid and parathyroid glands, pituitary glands, testicles, pancreas, liver, and stomach. We discuss a case of an Oncocytoma arising in the parotid gland in a middle-aged female.

3. Case Report

A thirty-seven-year-old female presented to the outpatient department with a complaint of swelling in the right parotid region for 1.5 years. The swelling was slow-growing, insidious in onset; non-tender and overlying skin was unremarkable. On palpation, a firm swelling was identified in the right parotid region. A provisional diagnosis of a benign salivary gland neoplasm was made. The patient was advised an MRI which revealed a well-defined mass in the superficial lobe of the right parotid gland. The patient was planned for right superficial parotidectomy followed by intra-operative assessment for diagnosis. The right superficial parotidectomy specimen was sent for frozen examination. The specimen received consisted of two soft tissue pieces measuring 4 cm in aggregate with a circumscribed tan brown area measuring approximately 2 cm in greatest dimension and surrounding salivary tissue. The frozen sections showed features suggestive of a Benign Oncocytic neoplasm. Primary closure was done after achieving haemostasis and the healing was uneventful.

The remaining specimen was subsequently examined histopathologically. The sections showed a well-circumscribed tumor com-

posed of organoid nests & trabeculae of large polygonal cells with granular eosinophilic cytoplasm & vesicular nuclei with small nucleoli & minimal anisonucleosis. No significant pleomorphism or mitoses was seen. No infiltrative features or vascular invasion was seen. The features were consistent with Oncocytoma (Figure 1A-B, 2A-B). All the peripheral and deep margins of the excised specimen were uninvolved. The patient did well postoperatively, and no recurrence was noted two months' post-surgery.

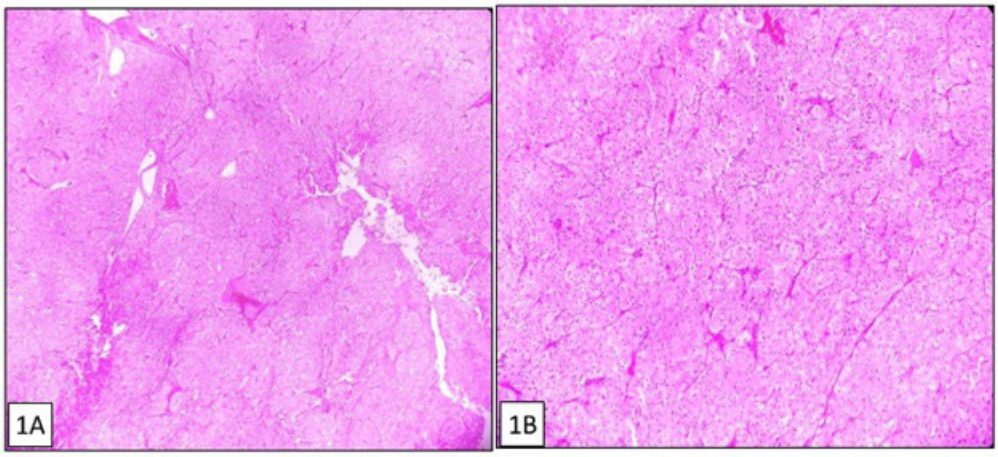

Figure 1: Excision Photomicrographs
A, B) Photomicrograph showing well circumscribed tumor composed of organoid nests & trabeculae of large polygonal cells (A- HE-40x; B- HE- 100x)

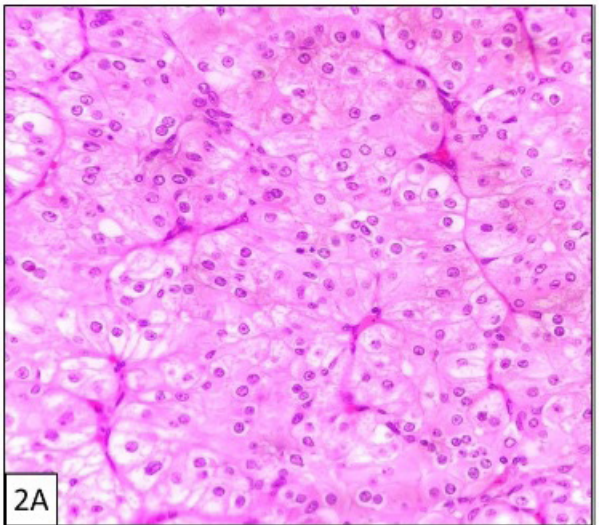

Figure 2: Immunohistochemistry Photomicrographs
A) Photomicrograph showing large polygonal cells with granular eosinophilic cytoplasm & vesicular nuclei with small nucleoli (HE-400x)

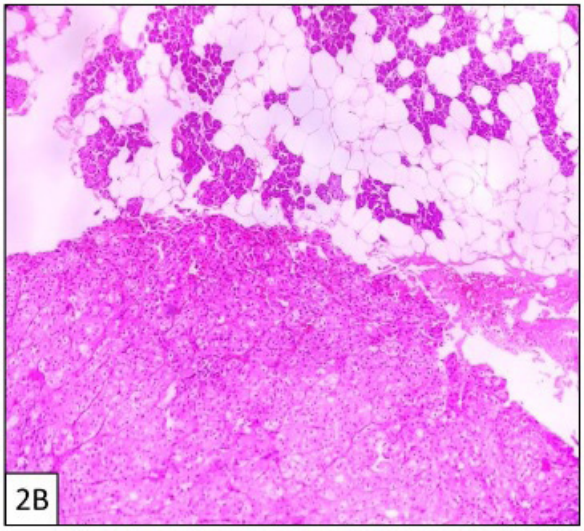

Figure 2B: Photomicrograph showing tumour with adjacent unremarkable salivary tissue (HE- 40x)

4. Discussion

Oncocytomas are uncommon salivary gland neoplasms, comprising approximately 3-4% of all the head and neck tumors and less than 2% of all salivary gland neoplasms. The parotid gland is the most commonly involved organ accounting for approximately 80% of salivary gland oncocytomas. These tumors are most commonly seen in the sixth to eighth decade of life. In the present case, the incidence was at a younger age; the patient being in her fourth decade of life at the time of presentation. Little or no sex predilection has been reported in the previous literature; few studies have reported slight female predilection similar to our case in a female patient [1-5].

Usually these tumors present as solitary slow-growing painless masses similar to other benign salivary glands. Clinically, often these neoplasms present as a firm mobile non- tender mass with a multi-lobulated appearance. According to the latest World Health Organization (WHO) classification, these lesions are categorised into three distinct types as follows oncocytosis, oncocytoma and oncocytic carcinoma.

The exact etiopathogenesis for oncocytomas is unknown. Some cases have reported an association of Radiation exposure with the occurrence of these tumours. In a study by Brandwein and Huvos, 20% (9/44) of the patients with oncocytomas had a history of radiation therapy or prolonged radiation exposure. However, no conclusive evidence exists for the correlation between the amount of radiation exposure and the development of oncocytomas. Oncocytomas are found mainly in the excretory ducts, also known as intercalated ducts, of the minor salivary glands and parotid gland. In the parotid gland, oncocytomas may be derived primarily from the reserve cells in the intercalated ducts. This is supported by immunohistochemical demonstration of CK7, CK8 and CK19 (markers for human duct cells) positivity in these tumors [1, 3, 4, 9].

The oncocytic change in the secretory epithelium is thought to be metaplastic phenomenon - a protective phenomenon against adverse change. Ageing might also cause functional exhaustion of the mitochondrial enzymes leading to compensatory mitochondrial hyperplasia to overcome an energy-deficient condition. Usually a spectrum ranging from oncocytosis to benign oncocytomas and oncocytic carcinomas is observed in Oncocytic lesions of the parotid gland. Also, there have been cases reported with coexistence of these oncocytic lesions, this reinforces the concept that a progressive transition is present between these oncocytic lesions [8-9].

Oncocytes can be observed in many salivary gland lesions, casuing diagnostic challenges. Oncocytic metaplasia can be often present in benign and malignant tumors such as pleomorphic adenoma, myoepithelioma, basal cell adenoma, mucoepidermoid carcinoma and polymorphous adenocarcinoma. However, these oncocytic changes are not as extensive as seen in an oncocytoma.

Fine Needle Aspiration (FNA) is commonly used as an initial diagnostic procedure for investigating salivary gland masses due to its cost-effectiveness, simplicity, and fast results. The cytologic features consist of a uniform population of cells with granular eosinophilic cytoplasm arranged in sheets, papillary structures, and singly. Generally, no atypia is identified. However, the sensitivity of FNAC in detecting these lesions is reported to be low approximately 29% [1, 3, 5, 6].

Histopathology remains the gold standard. WHO has defined the oncocytoma of salivary glands as a “benign tumor composed exclusively of large epithelial cells with characteristic bright eosinophilic granular cytoplasm”. The oncocytes are arranged in sheets, nests, trabeculae, and duct-like patterns, separated by a thin fibrovascular stroma. Microcysts and macrocysts may be observed. Occasionally, the entire tumour may consist of clear cells and is referred to as clear cell oncocytoma. The tumour cells stain with phosphotungstic acid haematoxylin. Although oncocytoma is conventionally thought of as a neoplasm with a single cell type, a basal cell population (positive for p63 and CK5/6) is present in all oncocytomas. The finding of multiple unencapsulated nodules and residual non-oncocytic salivary gland parenchyma within the nodules favours nodular oncocytosis rather than oncocytoma. The absence of lymphoid stroma and papillary cystic architecture distinguishes an oncocytoma from a Warthin tumour.

According to WHO, two criteria are important while making a diagnosis of oncocytic carcinoma. The first is the identification of tumor cells as oncocytes and the second is pathological evidence of local infiltration and or metastasis. Oncocytic carcinoma shows a greater mitotic activity and more nuclear pleomorphism compared to a benign oncocytoma [1, 6, 8].

Surgical management with radical or superficial parotidectomy represents the cornerstone of therapy [4, 5]. In our case also, the patient underwent a superficial parotidectomy preserving the facial nerve. The postoperative period was uneventful.

5. Conclusion

Oncocytomas are rare tumors of the salivary glands with characteristic pathologic findings. Thus, it is important to consider these neoplasms while making a diagnosis of benign salivary gland lesions. Also, FNAC is not of much diagnostic significance due to an overlapping cytological picture with other neoplasms having Oncocytic changes. Thus, the histopathological assessment remains the mainstay for accurate diagnosis. Recurrence has not been reported in these lesions.

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