CASE REPORT

ONCOCYTOMA OF PAROTID GLAND

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ABSTRACT: Oncocytomas are rare benign epithelial neoplasms composed of oncocytes, which are large cells with granular eosinophilic cytoplasm containing excessive and atypical mitochondria. We report a case of oncocytoma of parotid salivary gland which constitutes between zero and three percent of salivary gland neoplasms.

KEYWORDS: Oncocytes, parotid gland.

INTRODUCTION: Identified criteria for salivary gland oncocytes include:

1. Appearance after maturity of the salivary gland;
2. A high level of oxidative activity;
3. An unusually large number of mitochondria; and
4. Absence of specialized features of normal cells, such as brush borders and basal enfolding. An estimated sixty percent of the cytoplasmic volume was occupied by mitochondria in salivary gland oncocytes.

CASE HISTORY: A 39 year old female was presented with a swelling over the left parotid region for about ten months duration. The swelling measures about 4x3 cm in size, non-tender, firm in consistency lifting the tragus of the left ear lobe. The swelling was excised and sent for histopathological examination.

Macroscopically, a single grey brown swelling measures about 3x3 cm in dimension. On cut surface a well circumscribed grey white areas are identified.

On microscopic examination, parotid salivary gland with its serous acini (FIG: 2) was noticed; adjacent to it are closely packed polyhedral shaped oncocytes with abundant eosinophilic granular cytoplasm with central nuclei (FIG: 1) was observed. The oncocytes are arranged in trabeculae resembling Hepatoid appearance (FIG: 1). With above histological features the diagnosis of Oncocytoma of parotid gland was made out.

DISCUSSION: Oncocytic cells had been identified in many organs but most frequently in salivary gland, thyroid gland, parathyroid, pulmonary tree, and kidney.¹

The occurrence of oncocytic cells in salivary glands can be categorized as oncocytic metaplasia, nodular or diffuse oncocytosis, and oncocytoma.

Oncocytic metaplasia was the transformation of ductal and acinar epithelium to oncocytes. Oncocytic metaplasia most frequently observed in mixed tumors and mucoepidermoid carcinomas of salivary gland.

Oncocytosis was the accumulation and proliferation of oncocytes in the salivary glands. These may be diffuse involving the entire gland parenchyma² or producing microscopic and macroscopic nodules which was termed as nodular oncocytic hyperplasia or nodular oncocytosis.³

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Oncocytoma was a nodule of oncocytes that was clinically detectable, circumscribed and demarcated from surrounding salivary gland parenchyma by an incomplete fibrous capsule and was significantly larger than other nodules of oncocytic cells that are present in the gland.

Oncocytomas constitute between zero and three percent of salivary gland neoplasms; the average was just under one percent.⁴ At the AFIP since 1985, oncocytomas comprised about two percent of all salivary gland epithelial neoplasms. The parotid gland was the predominant site of occurrence⁵ and oncocytomas in the minor salivary gland are rare.⁶

Among seventy two recent oncocytomas in the AFIP files two were from intraoral salivary glands. Oncocytomas are rare in patients younger than fifty years: less than six percent of the oncocytomas in the AFIP files since 1985 occurred in patients less than fifty years old. The peak incidence was in the seventh to ninth decades of life.⁷ Many investigators had reported an equal predilection for men and women,⁸ although the data of the AFIP and others indicate a slight female preponderance among patients.⁹

An increased incidence of salivary gland neoplasms had been associated with exposure of head and neck region to ionizing radiation.¹⁰ These oncocytomas occurred, on average, in much younger patients than those without a history of radiation exposure.

Swelling was the only common complaint of patients in all cases of oncocytoma; rarely pain was associated with these tumors. The duration of tumor before surgery was few weeks to twenty years, but less than two years was typical.² The swellings are single or multiple nodules. Brandwein and Huvos⁵ estimated that bilateral parotid gland or submandibular gland disease, synchronous or metachronous, occurs in at least seven percent of patients.

Grossly the tumor was single, encapsulated or well circumscribed; tan to red brown nodule was evident. Occasionally one or more cysts are present within the tumor nodules. The tumor range in size from one to seven centimeter, but three to four centimeter was typical.

With light microscopy the oncocytes are large polygonal cells with prominent, granular eosinophilic cytoplasm and centrally placed nuclei with dispersed chromatin and single nucleoli. The intensity of cytoplasmic staining was variable, darker and lighter cells were also identified. Ultrastructurally, the most conspicuous feature was abundant cytoplasmic mitochondria. The oncocytes in oncocytomas are arranged in an organoid pattern of tightly packed clusters that are separated and surrounded by thin, inconspicuous capillaries and strands of fibrovascular stroma.

Small lumens are often apparent in the centers of the clusters. In other tumors, the oncocytes are arranged in short serpentine cords in a hepatic-like arrangement. Microcysts or macrocysts transformation with an associated lymphoid infiltrate resembling Warthin's tumor may also be identified.

Oncocyte are cells with prominent eosinophilic cytoplasm, but paradoxically clear cells dominate particularly in multinodular oncocytic hyperplasia. Clear cell oncocytomas have the same organoid pattern; the clear cytoplasm was due to the accumulation of glycogen in the oncocytes noted to be PAS positive. In addition to electron microscopic evidence of mitochondrial proliferation was helpful in diagnosis; in addition to that, Phosphotungstic Acid Hematoxylin staining was often useful in identifying oncocytes.

DIFFERENTIAL DIAGNOSIS: Mixed tumor and mucoepidermoid carcinoma are the two salivary gland neoplasms that most frequently demonstrate oncocytic metaplasia. Oncocytomas lack the

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pleomorphic patterns, chondromyxoid tissue and proliferation non-cohesive myoepithelial type cells that typify mixed tumors. Mucous cell differentiation, demonstrated with mucicarmine stain for diagnosis of mucoepidermoid carcinoma, rare in oncocytoma. Clear cell neoplasms like clear cell mucoepidermoid carcinoma, clear cell adenocarcinoma, epithelial-myoepithelial carcinoma, clear cell acinic cell adenocarcinoma and the metastatic renal cell carcinoma are other differential diagnosis to be considered.

Reported recurrence rates for oncocytomas ranged from zero to thirty percent.¹¹ Multifocal tumor growth and incomplete excision appear to be factors in the incidence of recurrence. Excision was the principal mode of therapy for primary and recurrent tumors. Radiation had been used in some cases.⁸ Kosuda et al¹² recommended radioiodine therapy after finding reduction in tumor volume of an oncytoma in a patient treated with therapeutic dose of Iodine-131.

The patient was on constant follow up and was found to be free from tumor. He was advised for regular follow up life-long.

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MICROSCOPIC PICTURES: H & E SECTIONS

FIG. 1: 10X - Tumor composed of closely packed polyhedral cells with abundant eosinophilic cytoplasm, resembling hepatoid appearance with prominent small dark nuclei.

FIG. 1: 40X- Cells are arranged in trabecular pattern

FIG. 2: 4X- Parotid salivary gland adjacent to the tumor

FIG. 2: 10X- Parotid salivary gland adjacent to the tumor

FIG. 2: 40X- Tumor is composed of closely packed cells

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FIG. 3: 10X- Duct sorrounded by oncocytic cells

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