Salivary duct carcinoma of parotid gland.
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Citation

Abstract
A 40 year-old male presented with rapidly growing swelling in the right parotid region. Based on the fine needle aspiration cytology report of adenocarcinoma not otherwise specified, superficial parotidectomy was performed which showed the features of salivary duct carcinoma by HPE. The smears were reviewed to identify the potential pitfalls in the cytological diagnosis of salivary duct carcinoma.

INTRODUCTION
Salivary duct carcinoma is a distinctive primary neoplasm of the major salivary gland first described by Kleinsasser et al in 1968[1]. The term was selected because of its resemblance to ductal carcinoma of the breast. It is characterized by aggressive behavior with early metastasis, local recurrence and significant mortality. Nearly 85% of the cases occur in the parotid gland followed by submandibular gland. Rarely it is described in the hard palate. The tumor has predilection for older men in the 6th to 7th decades of life. A number of patients experience facial nerve palsy or paralysis and/or pain, and have cervical lymphadenopathy at presentation [1]. Familiarity with this entity is necessary to avoid false interpretation. Due to its apocrine features and usually a high nuclear grade, several primary and metastatic neoplasms enter the differential diagnosis particularly on fine needle aspiration cytology [2-5].

CASE REPORT
A 40-year-old male presented with painless swelling below the right ear lobule since 05 years with a history of rapid increase in the size of the swelling since 03 months.

On examination, there was a right parotid swelling of 7x4cms, hard in consistency. The overlying skin was stretched and shiny. No evidence of either facial nerve involvement or regional lymphadenopathy. Chest X-ray was normal. Clinically, there was no evidence to suggest either prostatic or breast carcinoma. The patient underwent superficial parotidectomy based on FNAC report of adenocarcinoma [not otherwise specified] [Fig.1&2].
**Salivary duct carcinoma of parotid gland.**

**Figure 2**
Fig. 2:- F.N.A.C. – cuboidal to columnar neoplastic cells having abundant delicate cytoplasm, round to oval nuclei attempting acinar/ductal structures (H&E, 40x10).

**Figure 4**
Fig. 4:- Salivary duct carcinoma – cribriform growth pattern of the neoplastic cells with surrounding hyaline sclerosis of the stroma (H&E, 10x10).

**Figure 3**
Fig. 3:- Salivary duct carcinoma – cut section – grey-white homogeneous surface with foci of necrosis and tiny cystic spaces.

**Figure 5**
Fig. 5:- Salivary duct carcinoma – cribriform growth pattern of neoplastic cells (H&E, 20x10).

**PATHOLOGICAL FINDINGS**
Grossly the specimen consisted of a roughly ovoid, nodular mass of 7x4x3cms with bosselated surface and adjacent remnant of normal salivary gland parenchyma. Cut surface; showed a well encapsulated grey-white tumor predominantly solid with areas of necrosis and small cystic spaces containing mucoid material [Fig.3]

**Figure 3**
Fig. 3:- Salivary duct carcinoma – cut section – grey-white homogeneous surface with foci of necrosis and tiny cystic spaces.

Histologically, it was a salivary duct carcinoma intra and infiltrating as evidenced by pleomorphic cuboidal epithelial cells forming solid nests, cribriform and comedone patterns, Papillary epithelial projections in to duct like structures and densely sclerotic hyalinized stroma [Fig.4-9]. The tumor is compressing adjacent normal looking salivary acinar component.
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**Figure 6**
Fig. 6:- Salivary duct carcinoma – multiple comedones surrounded by hyalinised, sclerotic stroma (H&E, 10x10).

![Figure 6](image)

**Figure 7**
Fig. 7:- Salivary duct carcinoma – large comedones surrounded by stroma showing dense hyaline sclerosis (H&E, 20x10).

![Figure 7](image)

**Figure 8**
Fig. 8:- Salivary duct carcinoma – hyalinised sclerotic stroma with duct cell proliferation (H&E, 4x10).

![Figure 8](image)

**Figure 9**
Fig. 9:- Salivary duct carcinoma – Papillary epithelial projections into duct like structures (H&E, 4x10).

![Figure 9](image)

**CYTOPATHOLOGY**
The H&E stained slides were subjected for review. The smears were moderately cellular comprising of cuboidal to columnar epithelial cells with pleomorphic vesicular nuclei exhibiting anisonucleosis, open chromatin and mildly acidophilic cytoplasm attempting acinar structures with inflammatory necrotic debris.

**DISCUSSION**
Salivary duct carcinoma is regarded as a high-grade aggressive tumor with morphologic resemblance to ductal carcinoma of the breast. There have been several reports describing the cytological features of salivary duct carcinoma; however accurate diagnosis by FNAC can still be difficult due to its non-specific high-grade nuclear features [2-5].
The cellular yield on FNAC of Salivary duct carcinoma can vary from low to high depending on the degree of desmplasia and necrosis. The tumor cells are large cuboidal, polygonal to round with moderate amount of finely granular to finely vacuolated, intact to fragile cytoplasm some of them looking plasmacytoid with mild, moderate to severe degree of nuclear pleomorphism and hyperchromasia. Nucleoli may or may not be conspicuous. The cells are arranged singly, in loosely cohesive groups, three dimensional clusters and flat sheets. Background necrosis is variable. Papillary clusters and cribriform are occasionally seen. Cribriform and comedonecrosis patterns are most obvious in cell block material [2-7].

It is important to exclude metastatic carcinoma particularly from breast, prostate and lung [3-5]. Although immunohistochemical staining for prostate specific antigen (PSA) and prostatic acid phosphates (PAP) may be useful to identify metastasis from prostatic carcinoma [3], PSA secreting Salivary duct carcinoma with elevated serum levels of PSA, but PAP negative has been reported [8]. Exclusion of primary in the breast and lung must be made largely on clinical grounds since their cytological appearance may be identical [3]. Expression of androgen receptor is claimed to be useful in the definitive diagnosis of these tumors on cytology [9]. Salivary duct carcinoma is estrogen receptor negative and occasionally progesterone receptor positive. It shares most of the other markers of mammary carcinoma. It has been suggested that negative estrogen receptor together with diffuse intense staining for carcinoembryonic antigen favor a diagnosis of salivary duct carcinoma over breast carcinoma [10].

By FNAC given the known difficulty in making an accurate diagnosis of Salivary duct carcinoma, the identification of a tumor exhibiting variable nuclear grade with cribriform, papillary and comedo patterns in the appropriate clinical setting of elderly patients with parotid mass and facial palsy should suggest the diagnosis of this uncommon tumor after excluding a metastatic carcinoma, though the present case is relatively younger and without usual features suggestive of malignancy.

References

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