

Original Research Article

Acinic cell carcinoma of parotid and review of literature

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ABSTRACT

Background: To study the clinical presentation, cytological and histopathological variants in acinic cell carcinomas (ACC) of parotid gland admitted in Yenepoya medical college.

Methods: This study is a retrospective study done over a period of 5 years from January 2015 to December 2019 on patients admitted with parotid swellings in Yenepoya medical college hospital. All patients diagnosed as ACC of parotid on histopathological examination were considered in the study.

Results: Out of 60 patients admitted with parotid swelling, 5 patients were diagnosed to have ACC of parotid. Mean age of the study subjects was 52 years of age. Gender distribution was 3 male cases and 2 female cases. FNAC suggestive of carcinoma in 3 cases, pleomorphic adenoma in 1 case and benign tumour of parotid in 1 case. Histopathology report revealed ACC in all the cases.

Conclusions: ACC is a rare tumor, representing about 2 to 4% of primary neoplasms of the parotid gland. It can be misinterpreted as benign in low grade pathologies. They are quite persistent in their potential for local recurrences and distant metastases, often many years later. Therefore, long term followup is mandatory after treatment.

Keywords: Parotid, Acinic cell tumors, Salivary gland

INTRODUCTION

Salivary gland tumors (SGT) are a rare group of tumours which accounts for 3% of all the head and neck tumors.¹ These tumors can be further classified into various types and subtypes. At present, almost 10 subtypes of benign and 20 subtypes of malignant salivary gland tumors have been described in various literature.² Most of the SGTs are benign of which pleomorphic adenoma is the most common type. Similarly, mucoepidermoid carcinoma and cystic adenoid carcinoma are the common ones among the malignant ones.^{1,2}

According to the world health organization, ACC is rare type of SGT mostly seen in the parotid gland, which is of epithelial type and the neoplastic cells demonstrate serous acinar cell differentiation by cytoplasmic zymogen secretory granules.³ It is more common in younger age group with female predilection.³

Epidemiological studies across the world have shown differences in the incidence and distributions of SGT, with diverse demographic results in different regions.^{4,5} The aim of this study is to study the clinical presentation, cytological and histopathological variants in ACCs of parotid gland admitted in Yenepoya medical college.

METHODS

We performed a single institution retrospective study of the patients presented to department of general surgery OPD in Yenepoya medical college hospital with parotid gland swelling. The details of the patients with parotid swelling were collected. The patient who was admitted with swelling in the parotid region between January 2015 to December 2019, and the histopathology examination suggestive of acinic cell tumors were included in the study. Other benign and malignant neoplasm of the

parotid was excluded. The total sample size was 60 which were included in the study.

Data was entered into SPSS software version 23 and qualitative data was expressed in number and percentages for categorical variables (age, groups, gender etc.). Quantitative data will be expressed in mean $\pm$ standard deviation. Paired t-test was used to analyze the test of significance.

RESULTS

Out of 60 patients admitted with parotid swelling, FNAC was suggestive of carcinoma in 23 (38.33%) cases, pleomorphic adenoma in 21 (35%) cases and benign tumours in 16 (26.66%) cases. (Figure 2).

Mean age of the study subjects was 52.6 years of age with 37 (61.66%) males and 23 (38.33%) females (Figure 1).

Histopathology revealed pleomorphic adenoma in 24 (40%) cases, mucoepidermoid carcinoma in 10 (16.66%) cases, ACC in 05 (8.33%) cases, clear cell carcinoma in 04 (6.66%) cases, squamous cell carcinoma in 03 (5%) cases and other benign pathologies in 14 (23.33%) cases (Figure 3).

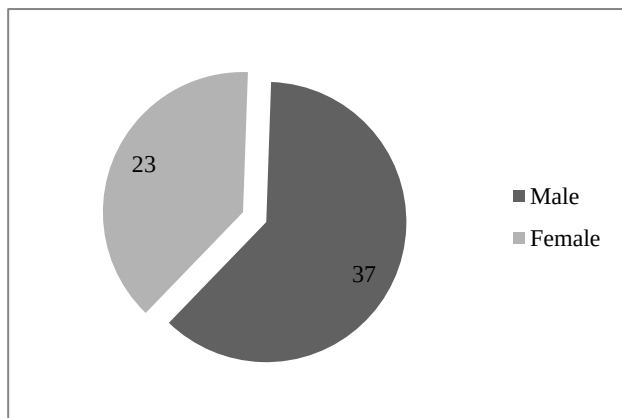


Figure 1: Gender distribution.

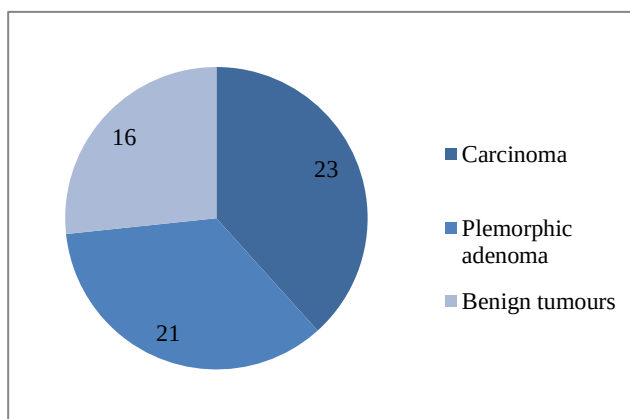


Figure 2: FNAC reports of the swelling.

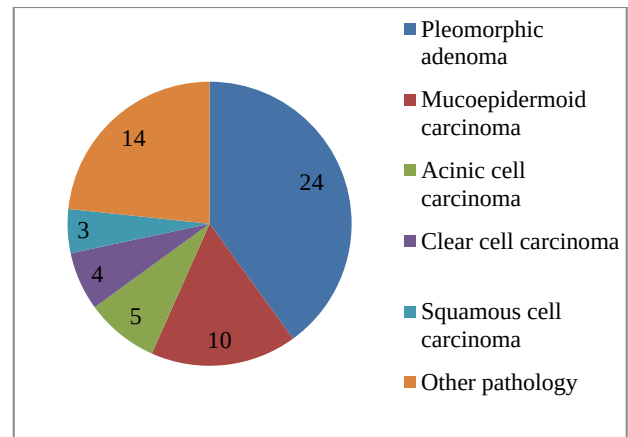


Figure 3: Histopathology report.

Among the cases of ACC gender distribution was 3 males and 2 females.

In the study age of the patients was 67 years, 38 years, 40 years, 52 years and 66 years.

Among the ACCs, FNAC was suggestive of carcinoma in 3 cases, pleomorphic adenoma in 1 case and benign neoplasm in 1 case.

Further on histopathological examination 05 cases were proven to be ACC of parotid gland

DISCUSSION

ACC was first described 50 years back by Godwin et al.⁶ Histologically the tumors resemble grape like clusters, hence the name acinus was coined which is originated from Latin. ACC is a malignant epithelial neoplasm of the salivary glands in which at least some of the neoplastic cells demonstrate serous acinar cell differentiation characterized by cytoplasmic zymogen secretory granules. Salivary ductal cells can also be a component of this low-grade neoplasm that most often occurs in the parotid gland. Earlier these were considered as benign adenomas, however recent studies have showed its high chances of recurrence, metastases and deaths, hence has been reclassified as a malignant carcinoma with low grade behavior.⁷

Salivary gland tumors are rare cancers and comprises of only 0.6% of all cancers. Among the salivary gland neoplasms, it accounts for 6%-8% and 17% of primary salivary gland malignancies, making it the third most common epithelial malignancy of salivary gland in adults and second most common among pediatric age groups. According to the national cancer data base report on cancer of the head and neck in the United States, for the reported cases of ACC, the most common site of origin is the parotid gland (86.3%).⁸

ACC are more common among the females than males, and the median age group is 52 years of age.^{8,9} However

in our study it was more among the males (61.66%) and the median age group was 52.6 years. ACC does not show any ethnic or racial predilection.⁸

ACCs are most commonly seen in the parotid gland which accounts for 81-98%, 11% is in the submandibular gland and 3% to 12% in the minor salivary glands among which is more in the palates.¹⁰ Other places where the ACCs are seen includes prostate, breast, lungs, stomach and pancreas.^{11,12}

The most common etiology for the ACCs includes history of exposure to radiation and family history.¹³ These are also seen among the people working in mining and exposure to various chemicals like asbestos, nickel, rubber, hairdressings and cosmetic products.³ EBV, other endogenous hormones like estrogen, progesterone and other androgens also may be linked to ACC, but the evidences are weak.³ These studies have suggested that ACCs may be hormone dependent like breast cancer.

ACCs are slow growing masses in the parotid regions, usually is unilateral but may be bilateral.¹³ The patients may present with pain and facial nerve palsy. The patient usually presents at an early stage, but may also present with lymph node or lung metastasis.

Recently studies have been conducted in the microscopic levels to find out the development and progression of the ACCs. Studies have shown that alterations in 4p, 5q, 6p and 17p are associated with oncogenesis of these tumors. Other also includes deletion of 6q, loss of Y and trisomy 21 for the development of ACCs. These carcinomas belong to the family of adenocarcinomas.

The diagnosis of ACCs is usually challenging both radiologically and cytologically due to its similarity with benign tumors and normal acinar cells.^{15,16} The differentials include clear cell carcinomas, mucoepidermoid carcinomas, Warthin's tumor and oncocytomas.^{6,17}

The investigation of choice for the diagnosis of ACCs are fine needle aspiration biopsy (FNAB), as it helps in both diagnostic and therapeutic management and has high sensitivity. The findings are characterized by acinar differentiated tumor cells and by certain cytoarchitectural patterns.^{15,16} False negative is very common in ACCs, due to absence of malignant features like necrosis, pleomorphism, and high mitotic activity and may be confused with benign salivary gland tumors or non-neoplastic parotid parenchyma.⁸

The radiological investigations include USG, CT, MRI and nuclear scans. USG helps in knowing the size, location and nature of the tumor and is easy, non-invasive and also aids in performing FNA. CT with contrast enhancement helps in evaluating size, extend, relationship with facial nerve and other structures and evaluation of metastasis. MRI signals helps to correlate

with histology findings of vascularity, hemosiderin deposition, fibrosis and calcification within the tumor.^{18,19}

Treatment includes surgical removal of tumor by total or subtotal parotidectomy followed by post operative Radiotherapy in case of recurrent, undifferentiated, positive margins, and one with nodal metastasis.^{8,9} Nerve grafting may be recommended for better quality of life in case of total parotidectomy. Chemotherapy for ACC has largely been considered ineffective, except for pain-relief or partial responses.

CONCLUSION

ACC of the salivary glands are distinctive neoplasm of individually unpredictable behavior. Recent studies are increasingly suggesting that there is a subset of ACCs with poor prognosis. Prolonged follow-up data are believed necessary to gauge the impact of treatment on survival. Multiple recurrences and metastasis to cervical lymph nodes indicate a poor prognosis. Distant metastasis is associated with very poor survival. The overall 5-year disease-specific survival is estimated to be around 91%, and 88% at 10 years. For high-grade tumors, the 5-year survival rate was only 33%.¹⁰

Although slow-growing, ACCs are quite persistent in their potential for local recurrences and distant metastases, often many years later. Local and multiple recurrences may occur in up to half of patients. Recurrences and metastases after 3 to 10 years are common, especially after inadequate primary tumor removal. Recurrences more than 20 or 30 years after initial treatment are also noted in the literature. Due to the notably high tendency of ACC to recur and to produce latent metastasis, long-term follow-up is mandatory after treatment.

Limitations

This is a retrospective study means that there are issues with incomplete and/or inconclusive data. The number of patients is likewise insufficient to draw any significant conclusions. To back up the findings, there is a need to conduct more randomized control trials.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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