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DIAGNOSTIC DILEMMA IN PAROTID TUMORS: A CASE OF ACINIC CELL CARCINOMA. A CASE REPORT.

Oncology

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ABSTRACT

Background: Acinic cell carcinoma (ACC) of the parotid gland is a rare, low-grade malignancy that often masquerades as a benign tumor on both clinical and radiologic assessment, making early and accurate diagnosis challenging. **Case Presentation:** We report the case of a 26-year-old female who presented with a slowly enlarging, painless swelling below her right ear. Imaging via ultrasound and contrast-enhanced CT suggested a benign pleomorphic adenoma, while fine-needle aspiration cytology (FNAC) pointed toward an oncocytoma. Given these benign impressions, superficial parotidectomy was performed with facial nerve preservation. However, histopathological evaluation of the excised mass revealed classic features of acinic cell carcinoma, including serous acinar differentiation, zymogen granules, and microcystic spaces. The patient has remained disease-free on follow-up for over six months. **Discussion:** This case highlights the diagnostic limitations of FNAC and imaging in low-grade parotid malignancies. ACC can mimic benign tumors both cytologically and radiographically, leading to misdiagnosis. Histopathology remains the gold standard for definitive diagnosis. Given the potential for late recurrences and metastasis-even in tumors that initially appear indolent-long-term clinical and radiologic surveillance is imperative. **Conclusion:** ACC of the parotid gland poses a diagnostic dilemma due to its benign-like presentation. This case underscores the need for a high index of suspicion, especially in young patients, and the importance of comprehensive histopathological evaluation. A multidisciplinary approach remains critical to ensure optimal treatment and long-term outcomes.

KEYWORDS

Carcinoma, Acinic Cell; Parotid Neoplasms; Salivary Gland Neoplasms; Biopsy, Fine-Needle

INTRODUCTION

Acinic cell carcinoma (ACC) is a rare malignant epithelial neoplasm of the salivary glands, comprising approximately 1–6% of all salivary gland tumors and 10–12% of salivary carcinomas, with a strong predilection for the parotid gland [1–3]. ACC was first described by Nasse in 1892 and recognized as a malignant tumor in 1953 by Foote and Frazell [4,5]. It typically presents as a slow-growing, painless, mobile parotid mass that often mimics benign lesions on imaging studies [6,7]. Although ACC is generally considered a low-grade malignancy with a favorable prognosis, it exhibits heterogeneous biological behavior, with potential for recurrence, regional or distant metastasis, and mortality in a subset of high-grade tumors [3,8,9]. Histologically, ACC demonstrates serous acinar differentiation, with diverse growth patterns and cell types [7]. Herein, we report a rare case of parotid ACC initially misdiagnosed as a benign lesion, and we review the diagnostic challenges, histopathological diversity, and prognostic factors.

Case Study

A 26-year-old female patient, who was a non-smoker and non-drinker, presented with a firm, painless, fixed swelling beneath the right ear. The swelling measured approximately 3 × 2.5 cm, extending from the tragus to 1 cm below the mandible and about 5 cm from the corner of the mouth, and had slowly increased in size over two years.

Fine-needle aspiration cytology (FNAC) indicated a benign oncocytoma. Contrast-enhanced computed tomography (CECT) of the head and neck was performed, which subsequently suggested a benign pleomorphic adenoma of the parotid gland. As the lesion was localized to the superficial lobe of the parotid gland, surgical excision was performed with preservation of the facial nerve. The postoperative course was uneventful. Histopathological examination of the resected specimen (H&E staining) revealed a well-circumscribed tumour mass demonstrating serous acinar cell differentiation. Large polygonal tumour cells showed abundant, lightly basophilic cytoplasm containing dense, blue-purple zymogen granules. Fine capillary septa divided sheets of acinar cells into indistinct lobules. Clear cells, microcystic spaces, and lipomatous metaplasia were noted. These features were consistent with acinic cell carcinoma of the parotid gland. Following multidisciplinary discussion in tumor board, decision was taken to closely follow up the patient monthly and patient was reviewed every three months for six months and has been followed up to date with no evidence of recurrence.

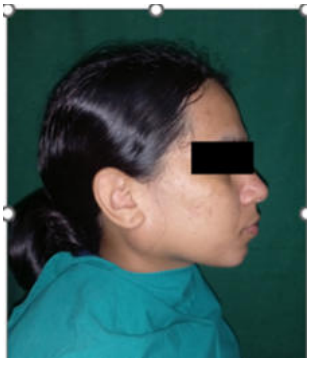

Figure 1: Preoperative image

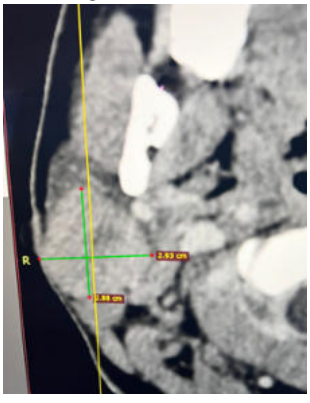

Figure 2: CECT image

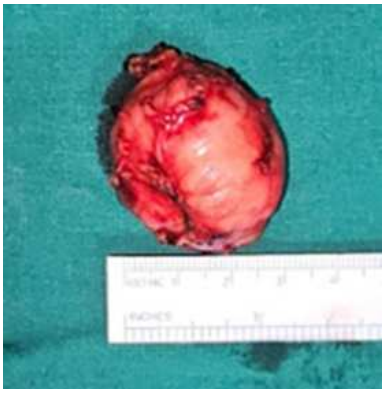

Figure 3: Gross specimen

DISCUSSION

Acinic cell carcinoma (ACC) is an uncommon malignant tumour of the salivary glands, accounting for approximately 1–6% of all salivary gland neoplasms but ranking among the more common parotid malignancies after mucoepidermoid and adenoid cystic carcinomas [1–3]. It shows a slight female predilection and typically occurs in the fourth to sixth decades of life, although cases in younger patients—such as our 26-year-old patient—have been reported, underscoring the broad age range of presentation [1,3].

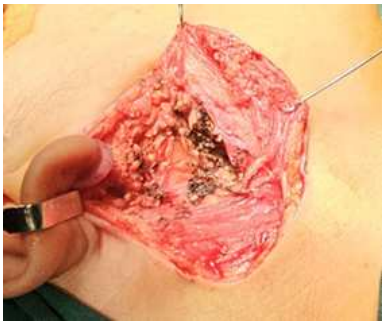

Figure 4: Parotid bed post resection

Clinically, ACC often presents as an asymptomatic, slow-growing, well-circumscribed mass in the parotid gland, frequently mimicking benign lesions such as pleomorphic adenoma or oncocytoma [6,7]. Imaging modalities such as ultrasonography (USG), computed tomography (CT), and magnetic resonance imaging (MRI) usually demonstrate nonspecific features like well-defined, heterogeneous lesions without clear signs of malignancy, which can pose diagnostic challenges [7,10]. In our case, both USG and CT suggested a benign pleomorphic adenoma, reflecting the high rate of radiologic mimicry noted by Sriskandan et al., who reported false-positive USG results in 9 of 220 patients (4.1%). [15]

Fine-needle aspiration cytology (FNAC) is a valuable adjunct in the preoperative assessment of parotid lesions; however, its diagnostic accuracy can be limited, particularly in distinguishing between benign and low-grade malignant tumors. Cha et al. found that FNAC had only 26.7% sensitivity for ACC, with a false-negative rate exceeding 70% [14]. Similarly, our patient's FNAC was misinterpreted as an oncocytoma, illustrating the limited reliability of cytology in this subtype. Histopathological examination remains the gold standard for definitive diagnosis, often supplemented by immunohistochemistry when necessary [10].

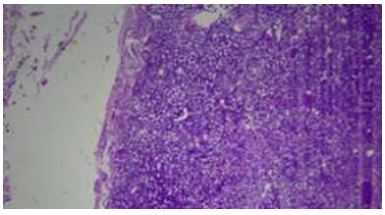

Figure 5: Histopathology (H&E) image

Gudmundsson et al. reported false-negative FNAC results in cases of mucoepidermoid carcinoma, acinic cell carcinoma (ACC), and epithelial-myoepithelial carcinoma, while false-positive diagnoses were noted in pleomorphic adenomas and even normal parotid tissue.[13] Our experience aligns with these findings, reinforcing that histology is indispensable when FNAC and imaging are inconclusive.

ACC typically exhibits a more favorable overall prognosis than other malignant tumors of the salivary glands. Eneroth et al. reported a 5-year survival of 89%, which fell to 56% at 20 years, highlighting the importance of long-term follow-up.[12] The two-year duration of tumour growth in our patient corresponds with Eneroth's observation of indolent early behaviour, although eventual high-grade transformation remains possible. Similarly, Spiro et al. reported a median time to recurrence of three years, whereas an extensive population-based study by Ellis and Corio estimated that roughly 82% of the recurrences were detected in the initial 5 years of treatment.[11]

Due to the risk of late local recurrence and distant metastases [8,9], long-term follow-up is essential. Although no universally accepted imaging schedule exists, Zenga et al. recommend radiological surveillance with CECT or MRI at 6–12-month intervals for the first 2–3 years, followed by annual imaging or as clinically justified [16]. A follow-up period of at least 20 years is necessary to determine the outcome and detect late recurrences. In our patient, we implemented clinical reviews every three months for the first six months, coupled with ongoing CECT and MRI; to date, no recurrence has been observed. This case underscores the diagnostic challenges of parotid ACC and reinforces the need for a multidisciplinary approach—integrating radiological, cytological, and histopathological correlation—to guide timely surgical management and optimize long-term outcomes.

CONCLUSIONS

This case highlights the significant diagnostic and therapeutic challenges posed by ACC. Despite its often indolent or benign appearance, ACC demands a high degree of clinical suspicion and a meticulous, multidisciplinary approach to ensure accurate diagnosis and effective treatment. The limitations of fine needle aspiration cytology, the histologic overlap with other salivary tumors, and the potential for radiologic mimicry underline the importance of comprehensive evaluation. Recognizing these pitfalls is crucial, as underdiagnosis or incomplete excision can lead to recurrence and adversely affect patient outcomes. Ultimately, this case serves as a reminder to approach every parotid lesion with caution, striving for clear margins and tailored care that prioritizes both oncologic control and the patient's quality of life.

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