Case Report

Case of Warthin Tumor with Squamous Metaplasia: A Recent Appraisal in the World Health Organization Classification System for Head and Neck Tumors

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Abstract

Fine needle aspiration cytology (FNAC) is commonly employed to diagnose salivary gland tumors due to its minimally invasive nature. However, repeated FNAC can lead to complications such as vascular injury, ischemia, and infarction, particularly in Warthin tumors (WT). These changes manifest as squamous metaplasia, necrosis, and inflammation, which can mimic malignancy, leading to diagnostic confusion. We present a case of infarcted WT in a 54-year-old male with left parotid swelling, where FNAC showed oncocytic and squamous metaplastic cells, raising concerns for squamous cell carcinoma.

Keywords:

Infarcted Warthin Tumor, Cytology, Squamous Metaplasia, Fine Needle Aspiration Cytology

Introduction

Fine needle aspiration cytology (FNAC) is a safe, quick, and minimally invasive technique [1]. However, repeated FNAC may rarely lead to morphological changes causing diagnostic dilemma [2]. Warthin tumor (WT) is the second most common benign tumor of the parotid gland and is often diagnosed using FNAC [3]. However, repeated FNAC can lead to significant changes in WT, including vascular injury, ischemia, and infarction. These changes, which manifest as squamous or mucinous metaplasia, necrosis, and inflammation, can mimic malignancy, creating diagnostic challenges [4]. Infarcted WTs resulting from FNAC-induced trauma are rare but can lead to increased swelling, pain, and potential misinterpretation [5]. Understanding these post-

FNAC changes is, thus, critical for accurate diagnosis.

We present one such case in a 54-year-old male with parotid region swelling, which posed a considerable diagnostic challenge on FNAC.

Case Report

A 54-year-old male, a known case of diabetes mellitus, hypertension, hypothyroidism, and coronary artery disease, presented with the complaint of a left parotid region swelling for the past 1 year, which was gradually increasing in size. He gave a history of antibiotic intake 3 months ago. The swelling was not associated with pain or fever. He did not have any history of difficulty in swallowing or any change in his voice. He was a chronic smoker, and there was no history of previous tuberculosis or close contact with a tuberculosis patient.

On ultrasonography, the left parotid swelling was 15 × 11 mm in size, well-defined and hypoechoic with areas of central necrosis. A similar 10 × 7 mm hypoechoic lesion was also noted in the parotid parenchyma in its superior portion. Magnetic resonance imaging described it as a well-circumscribed cystic signal intensity lesion with lobulated outline in the superficial lobe of the inferior aspect of the left parotid gland, with an exophytic component. However, neither report could conclude a probable diagnosis.

The patient was subsequently sent for FNAC. On examination, the swelling was approximately 2 × 1.5 cm in size, firm, non-tender, and immobile (Fig. 1). On aspiration, it yielded 2 ml of thin, murky fluid. When evaluated microscopically, the smears revealed inflammatory cells, occasional sheets of oncocytic cells, squamous metaplasia, and cystic macrophages in a proteinaceous granular background mixed with blood. The presence of squamous metaplastic cells was perplexing and raised suspicion for squamous cell carcinoma (SCC). However, despite extensive screening, no evidence of atypia could be found.

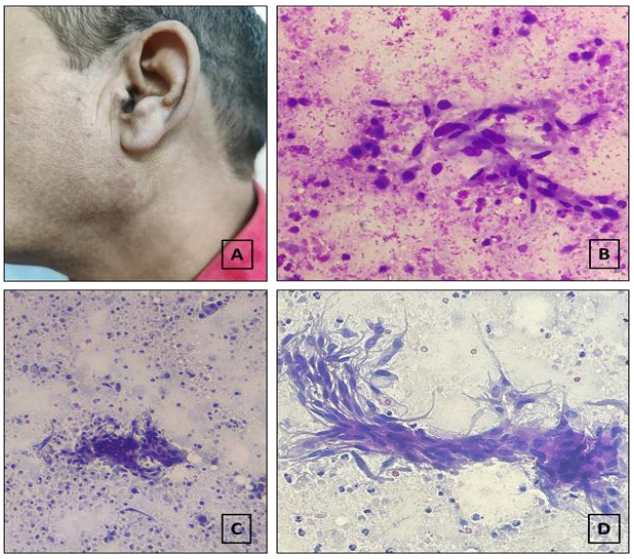

Figure 1: Fig. 1: Parotid region swelling seen in our patient (A). Smears shows cluster of oncocytic cells with few of these showing squamous metaplasia in a background of mild chronic inflammation (B, Giemsa, 400x). Smear shows occasional cluster of cells showing squamous metaplasia with inflammation in a granular proteinaceous background (C, Papanicolaou, 200x). Smear shows a cluster of cells showing squamous metaplasia in a background of inflammation (D, Papanicolaou, 400x).

Thus, a repeat history-taking was conducted, in which the patient finally admitted to a history of previous FNAC and repeated drainage of fluid from the site using injections at an outside center. This, thus, explained the presence of extensive metaplasia and a final diagnosis of an infarcted WT. The clinicians thus opted for conservative management, and the patient has been on follow-up since and has not shown any further increase in size or any additional symptoms.

Discussion

WT is a common benign tumor of the salivary glands, primarily the parotid, and is often seen in elderly males, particularly smokers [6]. FNAC is commonly used for diagnosis, but can occasionally induce significant morphological changes, such as necrosis and metaplasia, resulting in an infarcted WT. These post-FNAC alterations complicate its cytological and histological interpretation and can mimic malignancy, leading to diagnostic confusion [4,7]. Infarcted WTs following FNAC are relatively uncommon, with an incidence rate between 6% to 7.5% [8]. While complete infarction post-FNAC can occur, partial infarction is more frequently observed [4]. Incidental infarction without trauma is rare, with spontaneous infarction reported in approximately 6% of WTs [8].

Infarcted WT occurs primarily due to vascular trauma induced by FNAC. The fragile vascular supply of the tumor, combined with mechanical injury from the needle, leads to compromised blood flow, resulting in ischemia and subsequent infarction. Other etiological factors include infection, trauma, or prior radiation therapy, all of which contribute to infarction or metaplastic changes in the tumor [2,7].

The recent World Health Organization (WHO) Classification of Head and Neck Tumors (2022) introduced WT with squamous metaplasia as a distinct entity. This subtype of WT develops extensive squamous metaplasia in response to ischemic or infarctive changes, often due to trauma such as FNAC. Recognizing this entity is crucial, as the metaplasia can simulate malignant lesions, like SCC, making accurate diagnosis essential to avoid unnecessary aggressive treatments [9].

Patients with infarcted WTs often present with sudden swelling, pain, and tenderness in the region of the parotid gland post-FNAC. These symptoms may mimic malignancy, raising concerns for SCC. The rapid increase in tumor size following infarction can further complicate the clinical picture, making the differentiation between benign and malignant lesions challenging [5,6].

Diagnosis usually requires histopathological or cytological morphological analysis along with a history of previous injury due to FNAC or any other form of needling. Cytology smears typically reveal a mixture of necrotic debris, inflammatory cells, and oncocytic epithelial cells. Metaplastic changes, particularly squamous metaplasia, are commonly observed. The presence of non-keratinized squamous cells, inflammatory infiltration, and necrosis in the background are key cytological features. The loss of typical papillary structures, replaced by necrotic and metaplastic areas, can, however, be misleading in the absence of a thorough history and corroborative radiological findings [3,5,6]. In the present case, oncocytic cells, inflammatory cells, and squamous metaplastic cells without atypia were similarly noted. The gross murky appearance of FNAC aspirate and oncocytic cells in an inflammatory background seemed to favour a benign cystic lesion. However, the underlying benign neoplastic etiology favoring WT was difficult to establish due to low cellularity of oncocytic cells. Ultimately, the availability of a history of previous FNAC aided in reaching the diagnosis.

Differentiating infarcted WTs from other malignancies such as SCC or mucoepidermoid carcinoma is crucial, as the treatment approach significantly differs. SCC typically shows cytological atypia, increased mitotic activity, and invasive growth patterns, which are absent in infarcted WTs. Additionally, WT with squamous metaplasia lacks the mucin-producing cells characteristic of mucoepidermoid carcinoma. Careful morphological evaluation is essential to avoid overtreatment, as infarcted WTs remain

benign despite their alarming features [6]. These generally do not require aggressive treatment unless they cause significant symptoms, such as persistent pain or rapid enlargement. Accurate diagnosis is essential to avoid unnecessary surgeries. Conservative management is often sufficient for asymptomatic or mildly symptomatic cases, as was opted for by the clinicians in the present case [4,5].

Conclusion

Infarcted WTs present a diagnostic pitfall, particularly following FNAC, as their morphological and clinical features can mimic malignancy. The recognition of Warthin tumor with squamous metaplasia by the WHO highlights the need for heightened awareness of these benign reactive changes. Clinicians and pathologists must be vigilant in differentiating these lesions from malignant neoplasms to ensure early diagnosis and appropriate patient management.

Ethics approval and consent to participate: All procedures performed in this report involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No Ethical Committee approval was required for this case report by the department, because this article does not contain any experimentation beyond routine diagnostic procedures with human participants or animals.

Informed Consent: Informed consent was obtained from the patient included in this study.

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References

1. Raja F, Ganesan S. Superficial FNA procedure: contraindications and complications [Internet]. PathologyOutlines.com. 2024 [updated 2024 Jan 9; cited 2024]; Available from: https://www.pathologyoutlines.com/topic/cytopathologyfnacontraindications.html
2. Alwaheeb S, Rambaldini G, Boerner S, Coiré C, Fiser J, Asa SL. Worrisome histologic alterations following fine-needle aspiration of the parathyroid. J Clin Pathol. 2006;59(10):1094.
3. Yerli H, Avci S, Aydin E, Arikan Ü. The metaplastic variant of Warthin tumor of the parotid gland: dynamic multislice computerized tomography and magnetic resonance imaging findings with histopathologic correlation in a case. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2010;109(3):e95–8.
4. Gupta D, Thirunavukkarasu B, Bharti JN, Chugh A, Vishnoi JR. Post fine-needle aspiration near total infarction of Warthin tumor with squamous metaplasia: a diagnostic pitfall. Diagn Cytopathol. 2021;49(10):1144–7.
5. Yorita K, Nakagawa H, Miyazaki K, Fukuda J, Ito S, Kosai M. Infarcted Warthin tumor with mucoepidermoid carcinoma-like metaplasia: a case report and review of the literature. J Med Case Rep. 2019;13(1):12.
6. Di Palma S, Simpson RHW, Skálová A, Michal M. Metaplastic (infarcted) Warthin's tumour of the parotid gland: a possible consequence of fine needle aspiration biopsy. Histopathology. 1999;35(5):432–8.
7. Li S, Baloch ZW, Tomaszewski JE, LiVolsi VA. Worrisome histologic alterations following fine-needle aspiration of benign parotid lesions. Arch Pathol Lab Med. 2000;124(1):87–91.
8. Pettinato G, Manzoni C, Panico MR, De Chiara A, Di Benedetto S, Acquaviva A, et al. FNA-induced changes in salivary gland tumors. Acta Cytol. 1997;41(4):1015–22.
9. El-Naggar AK, Chan JKC, Grandis JR, Takata T, Slootweg PJ, editors. WHO classification of head and neck tumours. 5th ed. Lyon: International Agency for Research on Cancer; 2024. Chapter: Warthin tumor with squamous metaplasia.