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Clear Cell Variant of Mucoepidermoid Carcinoma: A Case Report with Review of Literature

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Abstract

Mucoepidermoid carcinoma (MEC) is a most common malignant salivary gland tumor, composed of mucous cells, epidermoid cells, intermediate cells and clear cells with cystic component. Clear cells account for about 10 percent of most of the mucoepidermoid carcinoma but on occasion, they can comprise a large portion of the tumor. Abundance of clear cells in a pathology presents a diagnostic challenge. We report here a case of clear cell variant of MEC in an unusual location in a 74 years old male who presented with a complaint of nodule below the lower lip.

Keywords: Mucoepidermoid carcinoma, Clear cells, nodule, Lower lip

Introduction

Mucoepidermoid carcinoma (MEC) is defined by the WHO as "a distinctive salivary gland malignancy composed of mucinous, intermediate (clear cell) and squamoid tumor cells, forming cystic and solid patterns." It is the commonest primary salivary carcinoma worldwide, and accounts for 2.8% to 16% of all salivary gland tumors, 12% to 30% of malignant salivary gland tumors, and 6.5% to 41% of minor salivary gland tumors, representing the most common type of minor salivary gland malignancy in most series[(1)] Previous studies have demonstrated that labial salivary gland tumors are significantly more common in the upper lip, accounting for 87% of all labial salivary gland tumors. Only 13-26% of all labial salivary gland tumors

occur in the lower lip. In the upper lip, 9-25% of salivary gland tumors are malignant because of the high prevalence of the canalicular adenoma in the upper lip. Although lower lip salivary gland tumors are uncommon, 43-86% of the lower lip salivary gland tumors are malignant, mostly MEC[2]. Therefore, diagnosis of MEC is unusual in the lower lip.

MECs typically present as slow-growing firm masses, clinically indistinguishable from the more common salivary gland tumor like pleomorphic adenoma[3].Clear cell predominant mucoepidermoid carcinoma is a variant of mucoepidermoid carcinoma (MEC) which is barely seen. The involvement of the lips by mucoepidermoid carcinoma has a frequency around 2.6%[4]. Herein, we report a case of clear cell variant of MEC below the lower lip. To our knowledge, this rare clinical entity has not been previously reported in this region.

Case Report

A 74 years old male presented with complains of lump below lower lip and ulcer inside mouth for 3 months. Initially it was small in size and increased progressively to attend the present size.

Clinical examination

On extra oral examination, a well circumscribed nodule was seen below lower lip of size approx. 2cm x 2cm in greatest dimension, colour was same as adjacent skin with smooth surface. The surrounding area was normal (Fig.1). On palpation consistency of nodule was firm and was non-tender. A solitary left submandibular lymph node of approx. 0.5 x0.5cm was palpable, firm in consistency, non-tender and was mobile.

Intra oral examination revealed an ulcerative lesion in left mandibular buccal vestibule of size approx. 1.0 cm x 0.5 cm in greatest dimension, red to pale in colour, irregular margin and punched out edge. Floor of the ulcer was covered with yellowish-slough (Fig. 2). On palpation induration was present and it was non-tender. An ortho pantomogram did not showed any relevant findings.

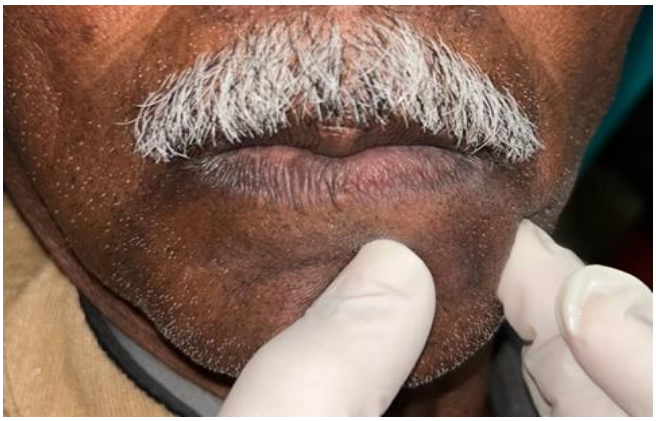

Figure 1: An endophytic nodule below lower lip

Figure 2: Ulcerative lesion in buccal vestibule

An incisional biopsy was performed and two pieces of soft tissues were received by our department. Tissue received had firm consistency, greyish-white in colour and rough surface texture (Fig. 3).

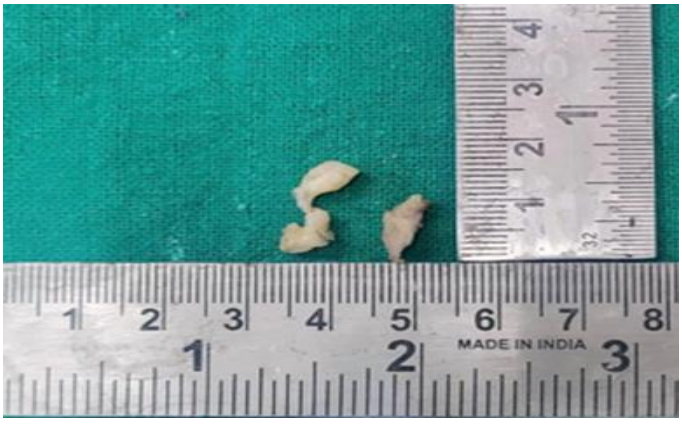

Figure 3: Gross tissue specimen

Microscopy

Histopathologically, H and E-stained section showed lobules and islands of clear cells which were round to polygonal in shape, with clear cytoplasm and most of the cells showed hyperchromatic nucleus which were eccentrically placed. Epidermoid cells were large polygonal cells with vesicular nucleus and intermediate cells were ovoid cells with hyperchromatic nucleus and scant cytoplasm. Focal area of keratinization was also evident. Connective tissue stroma also showed few dilated excretory duct, normal salivary gland parenchyma, muscle tissue and neuro vascular bundles.(Fig 5,6,7 and 8)

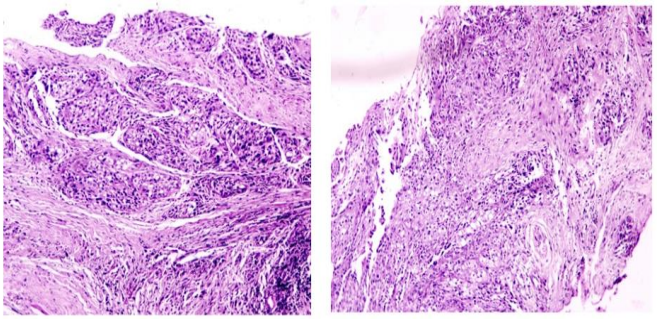

Figure 4: Clear cells in lobules and islands (H-E stain 10 x view)

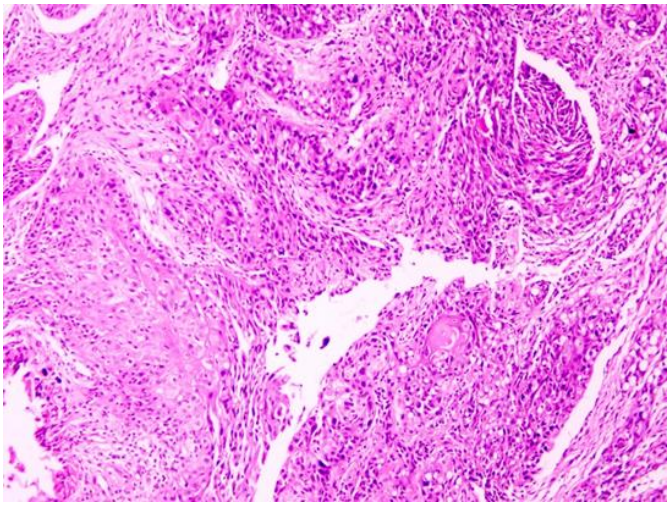

Figure 5: Focal area of keratinization(arrow) H-E stain,10 x

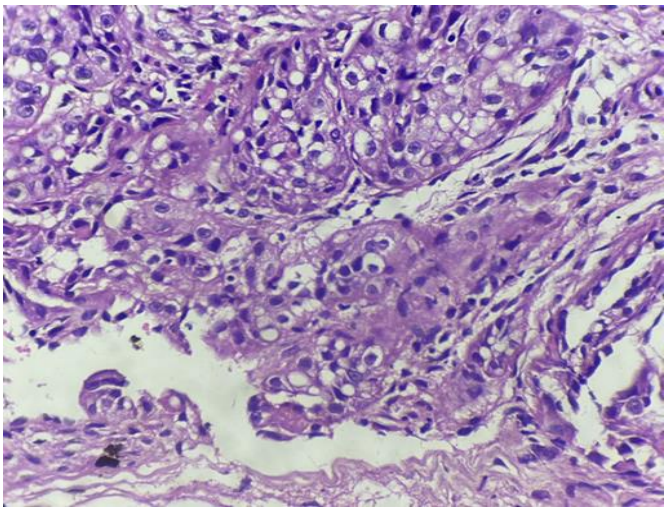

Figure 6: Clear cells with centrally placed and eccentrically placed nucleus (H-E stain, 40x)

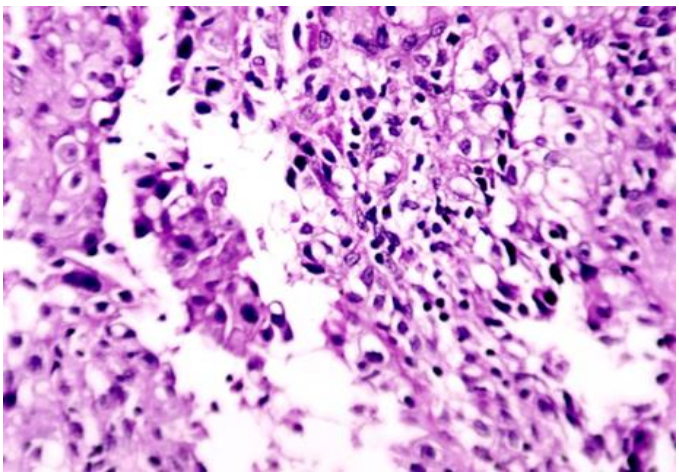

Figure 7: Epidermoid cells (arrow) H-E stain,40 x

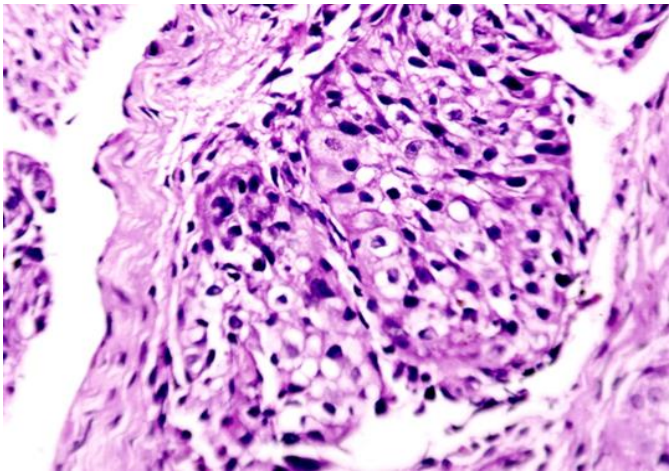

Figure 8: Intermediate cells(arrow) H-E stain,40 x

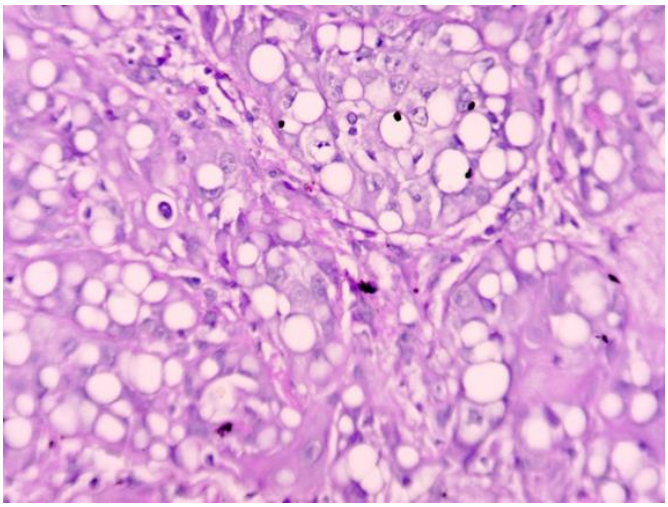

Figure 9: PAS negative clear cells

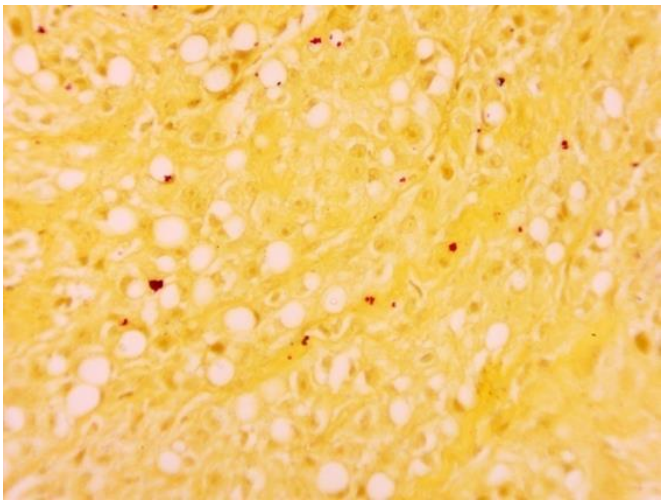

Figure 10: Mucicarmine negative

Discussion

Mucoepidermoid carcinoma is a malignant epithelial tumor, first studied and described as a separate entity by Stewart, Foote and Becker in 1945. It is the most common malignant neoplasm observed in the major and minor salivary glands. They represent 29–34% of malignant tumors originating in both major and minor salivary glands[5]

The term clear cells refer to cells having a clear halo around their nuclei, which may be due to abundant glycogen or other material that is not stained by Haematoxylin or Eosin. Clear cell tumors are infrequent in oral cavity and are observed in many different tumors that are usually odontogenic, salivary and metastatic in origin[6]. Clear cells may be a predominant component or rare finding in salivary gland tumours. These lesions are rarely encountered and account for 1%–2% of cases in the oral cavity(7). There can be focal or extensive clear cell change in a lesion. Based on the patterns of clear cell presentation of the lesion, tumor origin and the knowledge of the frequency it will be helpful in determining a diagnosis and to differentiate them into benign and malignant clear cell tumors[8].

Clear cells appear as large, polygonal cells with distinct outlines and a hydropic, watery clear cytoplasm. The nuclei are small, vesicular or pyknotic, and centrally placed. The origin of these clear cells in MEC has been debated. The presence of clear cytoplasm can be due to three basic factors. First, due to intracellular accumulation of components like glycogen, lipid, or mucin. Second, due to scarcity of cytoplasmic organelles like mitochondria, and thirdly due to a fixation artifact[6]. The mucoepidermoid carcinoma is composed of mucous secreting cells, epidermoid type (squamous) cells and intermediate cells. The mucous cells have abundant, pale, foamy cytoplasm that stains positively for mucin stains. The epidermoid cells have squamoid features, a polygonal shape, intercellular bridges and rarely keratinization. A population of cells that is often more important in recognizing MECs is a group of highly prolific, basaloid cells referred to as the intermediate cells. These cells are larger than basal cells and smaller than the squamous cells and are believed to be the progenitor of epidermoid and mucous cells. Occasionally clusters of clear cells can be present. These clear cells are generally mucin and glycogen free[5]. In our case also clear cells component were PAS and mucicarmine negative (Fig 9 and 10).A differential diagnosis of clear cell variant of MEC, clear cell

adenocarcinoma and clear cell squamous cell carcinoma was made.

As in our case, majority of lesional tissue showed clear cell component admixed with epidermoid cells and intermediate cells, a final diagnosis of clear cell variant of mucoepidermoid cell carcinoma was made. PAS and mucicarmine negative reaction of clear cells suggested that they were glycogen and mucous free. Various etiological factors have been proposed for the pathogenesis of the clear cells in MECs but it is still under debate. It has been proposed that they may be a result of hydropic degeneration of the epidermoid cells, but may also result from fixation artifacts or the presence of lipid cells[9]

Clear cell variant of MEC does not vary in clinical setting from conventional MEC and shows a similar female predominance (3:2) and the mean age of onset is 5th decade of life. They usually form a painful mass of varying duration and invade the underlying bone[9]

However, the presence of clear cells does not affect the grading of mucoepidermoid carcinoma, but it has been noted that clear cells usually predominate in high-grade tumours and make the prognosis of solid mucoepidermoid carcinoma poor[6]

Treatment of MEC depends on aggressiveness and the extent of spread of the tumor. High-grade MEC requires a more aggressive surgical approach with or without postoperative radiotherapy. The survival rate of the patient with low-grade MEC is approximately 92%, whereas, in high-grade MEC, the survival rate is roughly 24 %[10]

Conclusion

Presence of myriads of clear cells in any pathology contributes to diagnostic challenge. The abundance of clear cells in any lesion leads to greater invasiveness and higher chances of recurrence. So, proper identification of clear cells is crucial for better prognosis.

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