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View from Beneath: Pathology in Focus

Calcifying and keratinizing ameloblastoma of the maxilla

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Abstract

A case is described of ameloblastoma of maxilla presenting with numerous calcified keratin pearls. The significance of cellular variation in relation to the behavioural potential of the ameloblastoma in general is briefly discussed.

Introduction

The histomorphological spectrum of ameloblastoma, the most clinically significant odontogenic neoplasm of the jaw bone, is diverse. Several variants have been recognized, namely, acanthomatous, basal cell, granular cell, unicystic, desmoplastic and clear cell types (Pindborg *et al.*, 1971; Hartman, 1974; Robinson and Martinez, 1977; Eversole *et al.* , 1984; Waldron and El-Mofty, 1987; Ng and Siar, 1990). We report a case of maxillary ameloblastoma presenting with calcifying and keratinizing pearls.

Case report

A 35-year-old Malay male presented with a right maxillary swelling of five years duration. The swelling was slowly-growing, firm and painless. There was marked bucco-palatal expansion. Radiographs revealed a radio-opaque mass extending into the right antrum. The clinical impression was fibro-osseous lesion or calcifying epithelial odontogenic tumour.

A right hemimaxillectomy was performed after an incisional biopsy examination disclosed ameloblastoma. An obturator was inserted and follow-up for three years after primary surgery has not shown any evidence of recurrence.

Pathology

Histological examination of the hemimaxillectomy specimen disclosed a non-encapsulated tumour mass comprising follicles of odontogenic epithelium scattered against a fibrous connective tissue stroma. These epithelial islands characteristically consisted of two basic cell types: central stellate reticulum-like cells and peripheral low columnar preameloblast-like cells (Fig. 1). Within many of these islands multiple, discrete foci of squamous metaplasia progressing to keratin pearl formation and dystrophic calcification were frequently observed (Figs. 2 & 3). These calcified keratinized foci may appear as concentric laminated bodies (Fig. 4). Special stains disclosed them to be

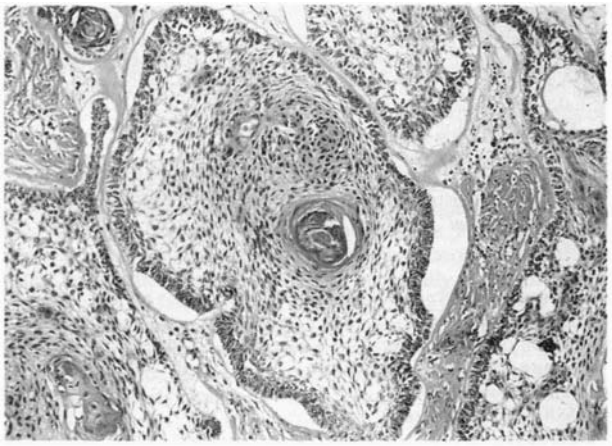

FIG. 1

Tumour epithelial islands consisting of central stellate reticulum-like cells and peripheral preameloblast-like cells. Haematoxylin and eosin (×99).

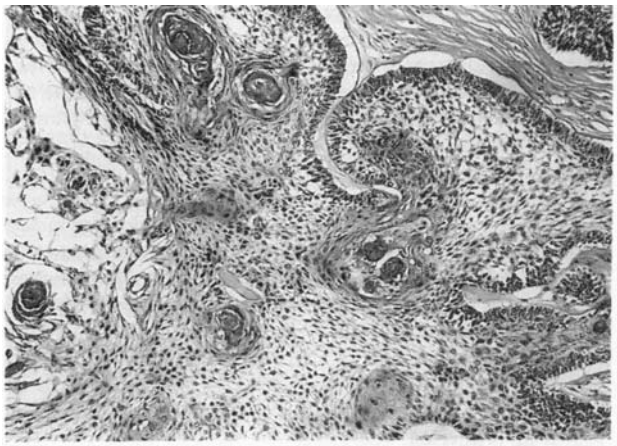

FIG. 2

Tumour epithelium showing numerous, discrete foci of squamous metaplasia progressing to keratin pearl formation and dystrophic calcification. Haematoxylin and eosin (×99).

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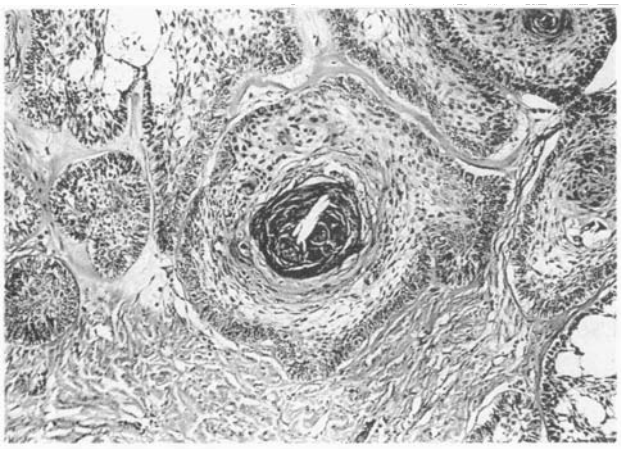

FIG. 3

Another tumour island showing central keratin pearl formation. Haematoxylin and eosin (×99).

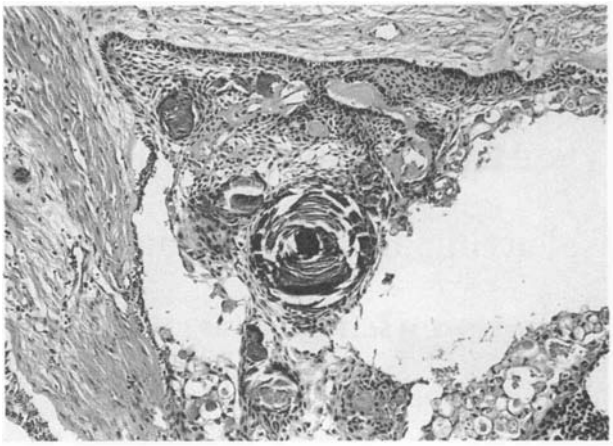

FIG. 4

Calcified keratin pearl having a concentric laminated configuration. Haematoxylin and eosin (×99).

diastase-resistant, PAS-positive and mucicarmine-negative. Within the intervening fibrous connective tissue stroma, no inductive changes were observed.

Comment

The histological appearances of the currently reported tumour were essentially those of follicular ameloblastoma. The numerous calcified keratin pearls encountered in this lesion represent an added and uncommon finding. They resembled those seen in the papilliferous keratoameloblastoma with the exception that other features such as keratinizing cysts and tumour islands with a papilliferous appearance which are characteristic of this entity were not found in the current tumour (Pindborg and Weinmann, 1958). Keratinization and dystrophic calcifications are also commonly seen in craniopharyngiomas, the pituitary counterpart of ameloblastoma of the jaw bones (Shafer *et al.*, 1983).

The ameloblastoma is well recognized as a benign odontogenic neoplasm with a distinct tendency towards local invasiveness and recurrence after treatment. With the exception of the unicystic and granular cell variants, it is generally known that the cellular variation that may occur in the ameloblastoma does not in anyway influence its clinical behaviour; the unicystic ameloblastoma is believed to have a less aggressive biological potential and a favourable prognosis, while the granular cell ameloblastoma is said to have a slightly higher proclivity towards recurrence than its other histological counterparts (Hartman, 1974; Robinson and Martinez, 1977). Previous views that squamous metaplasia and keratinization are indices of malignancy, greater invasiveness and recurrence are now considered baseless (Anneroth and Hansen, 1982). With these in mind it is evident that the presence of keratin pearls and acanthomatous change as encountered in the currently-reported case would not in any way potentiate the biological behaviour of this lesion. Nonetheless, as ameloblastomas are known to recur after many years of apparent cure, long-term follow-up is advised.

Key words: Ameloblastoma; Maxillary neoplasms

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