GRANULAR CELL METAPLASIA OF THE GINGIVAL EPITHELIUM IN A CASE OF AMELOBLASTOMA

* CHONG HUAT SIAR,
  BDS, MSc, FDSRCPs, MRCPath

** KOK HAN NG,
  BDS, MSc, FDSRCPs, MRCPath

* Associate Professor
  Department of Oral Pathology, Oral Medicine and Periodontology
  Faculty of Dentistry
  50603 Kuala Lumpur
  Malaysia

** Head
  Division of Stomatology
  Institute for Medical Research
  Jalan Pahang
  50588 Kuala Lumpur
  Malaysia

INTRODUCTION

This is a brief report of a case of maxillary ameloblastoma presenting with extensive soft tissue involvement, and exhibiting in one area granular cell metaplasia of the gingival epithelium overlying the encroaching tumour mass.

CASE REPORT

A 35-year-old Malay male presented with a complaint of a slowly progressive swelling of his right maxilla of a few years' duration. Clinically, a massive expansile mass involving the whole of the right maxilla was found. Radiographs disclosed right antral involvement. An incisional biopsy confirmed the lesion to be an ameloblastoma. Right hemimaxillectomy was performed and the excised specimen was further submitted for histopathological examination.

Histological examination of the entire specimen showed an essentially conventional ameloblastoma comprising solid and multicystic tumour areas. The lesional tissue in these areas consisted of discrete odontogenic epithelial islands having a typical ameloblastoma histology i.e. peripheral premeloblast-like cells enclosing centrally, stellate reticulum-like cells. These islands were embedded in a fibrous connective tissue stroma. Multiple sectional studies revealed extensive tumour involvement of the overlying soft tissues. In one area, the gingival epithelium close to the encroaching tumour mass showed downward proliferations and buddings consisting of large polygonal cells with abundant granular cytoplasm (Figs. 1 and 2). Special stains revealed that these cytoplasmic granules were PAS-negative, nonmucicarmophilic and nonreactive

ABSTRACT

A case of conventional ameloblastoma of the right maxilla in a 35-year-old Malay male is described here primarily to report on the unusual occurrence of granular cell metaplasia of the gingival epithelium overlying the advancing tumour mass. The granular cytoplasmic content of these cells were PAS-negative, nonmucicarmophilic and nonreactive when stained with anti-keratin, anti-S 100 protein, anti-desmin and anti-vimentin antibodies.

with anti-keratin, anti-S-100 protein, anti-desmin and anti-vimentin antibodies.

Fig. 1 Photomicrograph showing the overlying gingival epithelium and underlying encroaching ameloblastoma tumour mass (black arrows). Note granular-celled epithelial prolongations and budings (clear arrows). (Haematoxylin-eosin stain; original magnification x 40).

Fig. 2 Higher power view of the same site of the gingival epithelium as in Fig. 1 showing details of the polygonal epithelial cells with abundant granular cytoplasm. (Haematoxylin-eosin stain; original magnification x 200).

DISCUSSION

Our initial impression of the granular celled proliferations and budings noted in the gingival epithelium was that they probably represented granular cell metaplastic component of the advancing ameloblastoma that had secondarily fused with the overlying gingival epithelium. However serial sectional studies failed to demonstrate such a relationship between these two tissues. Furthermore, examination of multiple sections of the tumour revealed that aside from the occasional foci of squamous metaplasia and cystic degeneration observed, granular cell differentiation was not seen in any part of the tumour mass. These findings seem to suggest that the granular component noted in the gingival epithelium most probably represented an intrinsic change. This view is further supported by the observation that the staining reaction of these cytoplasmic granules also differed from those of the granular cell ameloblastoma in that unlike the latter, a positive reaction with PAS stain, anti-keratin and anti-S-100 protein antibodies was not seen.

Previous ultrastructural studies have shown that the cytoplasmic content of the granular cells in ameloblastoma is lysosomal in nature. We were unable to determine the nature of the cytoplasmic granularity of the gingival epithelial cells as seen in this case because of the reduced quality of the available formalin-fixed tissue for electronmicroscopic studies.

In our previous studies, we reviewed about 401 cases of ameloblastomas of the jaws diagnosed over a 25-year period and none of the cases demonstrated the abovementioned feature. A search of the English-language literature also revealed that such an occurrence has not been previously described. The function and significance of this granular cell change in the gingival epithelium therefore remained unknown. However in the granular cell ameloblastoma, several theories have been forwarded, the principal ones being that these granular cells represented an aging or degenerative process, an abortive attempt at enamel matrix precursor formation or a metabolic phenomenon.

ACKNOWLEDGEMENTS

We are grateful to Afidah and other staff of the Division of Stomatology, Institute for Medical
REFERENCES


Corresponding author’s address:

ASSOC. PROF. (DR.) CHONG HUAT SIAR
Department of Oral Pathology, Oral Medicine & Periodontology
Faculty of Dentistry
University of Malaya
50603 Kuala Lumpur
Malaysia
Tel: 03-7594859
Fax: 03-7561607