Compound odontoma with granular cells
Fumio Ide, Hideaki Sakashita and Kaoru Kusama

Department of Oral Pathology and Second Department of Oral and Maxillofacial Surgery, Meikai University School of Dentistry, Saitama 350-0283

(Received 14 February and accepted 14 June 2002)

Abstract: The authors present an interesting and unusual histology of compound odontoma from an 18-year-old female. Part of the subepithelial connective tissue beneath the enamel organ epithelium was replaced by a granular cell nodule, of a probable histiocytic nature. This case represents the first published report of odontoma accompanied by granular cells. (J. Oral Sci. 44, 113-115, 2002)

Key words: granular cells; non-odontogenic lesions; odontoma; odontogenic lesions.

Introduction

Compound odontoma is the most common of all odontogenic tumors (1). It is, as its name suggests, composed of histologically normal but morphologically abnormal miniature teeth enclosed in a follicular tissue. A search of the reported cases of odontoma failed to reveal an example associated with granular cells other than the ubiquitous ghost cells (1-3). We report herein the rare occurrence of granular cells as an unusual element of the histopathology of compound odontoma.

Case report

An 18-year-old female was referred for evaluation of a radiopaque lesion in the mandible. About 6 years before, her family dentist pointed out the delayed eruption of a canine of the right mandible. At that time, there was no radiographic abnormality. On admission, the right mandibular canine had not yet erupted. The overlying gingiva appeared intact without inflammation. Radiographic examinations revealed the presence of small tooth-like structures around the crown of the impacted tooth (Fig. 1).
Under the diagnosis of compound odontoma, the tumor was surgically removed.

Formalin-fixed, formic acid-decalcified sections showed that the tumor was composed of 5 miniature teeth. Each tooth-like structure, up to 5 mm in length, had an enamel matrix, dentin, cementum and pulpal tissue arranged normally on the whole (Fig. 2). In one of them, there was a solitary aggregate of granular cells in continuity with the enamel organ epithelium over the enamel matrix (Fig. 3A). With high-power magnification, granular cells had a large rounded cytoplasm with abundant pale eosinophilic granules and a small nucleus (Fig. 3B).

A delicate network of capillary and lymphocytic infiltrations was observed separating tightly packed sheets of granular cells. Eosinophilic fine granules showed weak staining with periodic acid-Schiff before and after diastase digestion. With the Masson trichrome stain, these granules stained reddish-brown. No similar accumulation of granular cells in other areas has been detected in multiple sections but isolated foci of ghost cells were found.

Discussion

Granular cell change is an accepted histologic feature in a wide variety of odontogenic and non-odontogenic lesions (4-7). There is no doubt that granular cell lesions are not a specific single entity (8-13), although such cells are basically the same in appearance. In odontogenic lesions, mesenchymal granular cells are found in central granular cell odontogenic tumors (14) and granular cell peripheral odontogenic fibromas (15), whereas epithelial lesions with granular cell transformation are granular cell ameloblastomas (16), plexiform granular cell odontogenic tumors (17) and granular cell odontogenic cysts (18,19).

The persuasive origin of congenital granular cell epulis is a question of controversy (20-22).

In 1983, Sunderland et al. (23) observed peculiar granular cells associated with the enamel organ of a developing mandibular incisor in a female infant. On the other hand, O'Brien (24) failed to detect any granular cell change in tissue from upper and lower alveolar mucosa containing odontogenic epithelial rests of 40 still-born infants. Recently, a granular cell nodule of histiocytic nature in the gingival operculum of a maxillary incisor has been reported (25).

The overall histological features of granular cells in our odontoma are more like those of pericoronal histiocytic aggregates as described above (25). No transition between granular cells and tooth germ mitigates against an odontogenic origin as proposed by Sunderland et al. (23). An apparent chronic inflammatory infiltrate scattered throughout the granular cell nodule supports the histiocytic origin.

As a final point, mounted data to date indicate that a variety of epithelial and mesenchymal cells have been implicated in the pathogenesis of odontogenic granular cell lesions. In all probability, the granular cells, regardless of origin, have been overlooked, since the diagnosis of compound odontoma requires only gross examination.

References
3. Tomich CE (1999) Benign mixed odontogenic
tumors. Semin Diagn Pathol 16, 308-316