

A comparative study of mucin histochemistry in mucous cells of salivary glands and odontogenic cysts

ABSTRACT

Introduction

Previous studies on the glandular odontogenic cyst (GOC) have largely focused on the application of immunohistochemistry for determining how the GOC lining epithelium compares with that of other odontogenic cysts. Studies on the histochemical composition of the mucous cells in the GOC are, however, lacking. This study therefore aimed to determine the mucin phenotype of the mucous cells in the GOC and compared these findings with the mucous cells in the epithelial linings of other odontogenic cysts and with normal salivary gland mucous acinar cells.

Materials and Methods

Twenty-seven cases made up of 10 GOCs, 9 dentigerous cysts (DC) with mucous cells and 8 radicular/residual radicular cysts (RC) with mucous cells were stained using the combined alcian blue pH 2.5-PAS (AB-PAS) histochemical technique. AB-PAS allows for differentiation between acidic- (type I mucous cells), neutral- (type II mucous cells) and mixed mucin-containing cells (type III mucous cells). Submandibular, sublingual and palatal salivary gland tissue was also subjected to AB-PAS staining. The odontogenic cysts and salivary glands were evaluated for the frequency of type I, II and III mucous cells in these tissues.

Results

There were significant differences between the level of type I, type II and type III mucous cells within each of the three cyst types; GOC ($p=0.006$), DC ($p=0.0004$), RC ($p=0.0017$). There were no significant differences in the cell counts for each mucous cell type between the 3 cyst types; type I mucous cells ($p=0.54$); type II mucous cells ($p=0.73$) and type III mucous cells ($p=0.97$). All 3 odontogenic cysts showed a predominance of type III mucous cells and this mirrored the mucin phenotype of the submandibular and sublingual salivary glands.

Conclusion

The mucin phenotype of the GOC is shared by DC and RC with mucous metaplasia. The overlapping mucin phenotypes of the different odontogenic cysts unfortunately does not support the use of the AB-PAS stain as a potential histochemical marker to distinguish between the GOC and other odontogenic cysts with mucous metaplasia. Similarities in the mucin phenotype between odontogenic cysts, submandibular and sublingual salivary glands may suggest a common ectodermal histogenetic origin for the mucous cells in odontogenic cysts and major salivary glands.