



Differential Expression of Claudin in Odontogenic Cysts

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Abstract

Objective This study aimed to analyze claudin-1, -4, and -7 expression in different types of odontogenic cysts (odontogenic keratocysts [OKCs], dentigerous cysts [DCs], calcifying odontogenic cysts [COCs], and radicular cysts [RCs]) as well as its association with OKC recurrence.

Materials and Methods Seventy samples of odontogenic cysts samples were immunohistochemically stained to detect claudin-1, -4, and -7 expression. Patient information and OKC recurrence data were recorded. The staining was analyzed semiquantitatively and categorized based on the pattern and percentage of positively stained cystic epithelial cells.

Statistical Analysis Expression of different claudins between groups was analyzed using the Kruskal–Wallis test with Dunn’s test, followed by post hoc pairwise comparison. The association between claudin expression and OKC recurrence was analyzed by the Mann–Whitney U test. Correlations among claudin expression were examined with Spearman’s correlation coefficient. Level of significance was at $p < 0.005$.

Results Claudin-1 was widely expressed in every odontogenic cyst. Most DCs (50%) expressed claudin-1 in more than 75% of cells, as did RCs (65%), while most OKCs (50%) expressed claudin-1 in 26 to 50% of cells. Most COCs (50%) expressed claudin-1 in 51 to 75% of cells. Every sample of OKC and RC was positive for claudin-4, but no sample showed staining in more than 51% of cells. Every odontogenic cyst was positive for claudin-7. DCs (35%), OKCs (55%), and RCs (40%) mostly showed staining in 26 to 50% of cells. High claudin-1 expression was shown in COCs, DCs, and RCs, while low expression of claudin-4 was shown in every odontogenic cyst. For claudin-7, the expression is high only in COCs. Claudin-1 and -4 was significantly different among each odontogenic cyst. High expression of claudin-1 was correlated with OKC recurrence. The correlations of claudin-1 with claudin-7 expression and claudin-4 with claudin-7 expression were significant in DCs. In COCs, claudin-1 and claudin-7 expression was significantly correlated.

Conclusions The expression of claudin-1, -4, and -7 was present in every odontogenic cyst, but the proportion of positive staining cells was different. Expression of claudin-1 is associated with OKC recurrence. Dysregulation of claudin expression may play a pathogenic role in cyst pathogenesis.

Keywords

- ▶ claudin
- ▶ odontogenic cyst
- ▶ odontogenic keratocysts
- ▶ dentigerous cysts
- ▶ radicular cysts
- ▶ calcifying odontogenic cysts

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