Wingless-type Protein-1 (Wnt-1) Expression in Primary Conventional and Unicystic Ameloblastomas and Their Recurrent Tumors

Type:

Article

Abstract:

Wingless-type protein (Wnt) is a family of 19 secreted glycoproteins that function as signaling transducers for cell-cell interaction, cell growth and differentiation. Wnt-1, a highly transforming member, has been implicated in tumorigenesis. The aim of this study was to elucidate the role of this cell signaling molecule in the development and progression of primary ameloblastoma and their recurrent tumors. Wnt-1 expression patterns were examined immunohistochemically in 22 primary and 14 recurrent ameloblastomas. These collectively consisted of the following subtypes: conventional (CA) (n=22), desmoplastic (DA) (n=2) and unicystic (UA) (n=12) ameloblastoma. Results demonstrated that CA (n=20/22; 90.9%), DA (n=2/2; 100%) and UA (11/12; 91.7%) showed high Wnt-1 expression percentages. Strong staining intensity for Wnt-1 was observed more frequently in primary CA (n=10/13; 76.9%) than in their recurrent counterparts (n=2/9; 22.2%) ($p<0.05$). Conversely, in UA, recurrent tumors (n=3/5; 60.0%) tend to stain strongly for Wnt-1 more frequently than their primary lesions (n=3/7; 42.9%) ($p>0.05$). Keratinizing cells in areas of squamous metaplasia also expressed Wnt-1 more intensely compared to their surrounding polyhedral stellate reticulum-like cells. Tumor islands containing granular cells were also Wnt-1 positive. Present findings confirmed that the Wnt signaling pathway is activated in ameloblastoma. Strong Wnt-1 expression in primary conventional and recurrent unicystic ameloblastoma suggests that Wnt-1 plays a more critical role in these subtypes. Positive expression of Wnt-1 in keratinizing ameloblastomatous tumor epithelium and granular cells complies with the anti-apoptotic properties of Wnt-1. Negative reactivity for Wnt-1 in 3 cases of ameloblastoma suggests that the development and progression of ameloblastoma may occur independent of this cell signaling molecule.

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