Differential expression of collagen IV alpha 1 to alpha 6 chains in basement membranes of benign and malignant odontogenic tumors

Type:
Article

Abstract:
Type IV collagen, the major component of basement membrane (BM), demonstrates a stage- and position-specific distribution of its isoforms during tooth development. To determine its localization in BM of odontogenic neoplasms, immunohistochemistry using six anti-a(IV) chain-specific monoclonal antibodies was performed. Results disclosed that BM demonstrated an irregular a(IV) chain profile in malignant odontogenic tumors as compared to benign odontogenic neoplasms. No alpha3(IV) chains were detected. Expression of alpha1(IV)/alpha2(IV) and alpha5(IV)/alpha6(IV) chains was stronger in desmoplastic (n=3) than in ordinary (n=5) ameloblastomas. The adenomatoid odontogenic tumor (n=2) distinctly expressed these chains in BM of cribriform areas and hyaline materials (which was also alpha4(IV)-positive), but weakly around epithelial whorls/rosettes/nests and mineralized foci. These five chains also stained BM and tumor cells of ameloblastic fibroma (n=3) and ameloblastic fibro-odontosarcoma (n=1), but not the inductive hard tissues. Ameloblastic carcinoma (n=2) showed specific alpha1(IV)/alpha2(IV) chain loss, while primary intraosseous carcinoma (n=1) demonstrated a discontinuous alpha1(IV)/alpha2(IV) and alpha5(IV)/alpha6(IV) staining pattern. The present results suggest that modification and remodeling of BM collagen IV alpha chains occur during odontogenic neoplasms’ progression.

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