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Cell differentiation due to Wnt signaling in ameloblastic fibromas

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Objective: Wnt signaling play fundamental and essential roles for odontogenesis through epithelial-mesenchymal interactions, which is thought to directly reflects the development of odontogenic neoplasms. Therefore, we examined Wnt signaling molecules in ameloblastic fibromas as the odontogenic tumor having epithelial mesenchymal interactions of the tumor components.

Materials & Methods: 6 cases of ameloblastic fibroma as the examined group, 8 cases of ameloblastoma and 5 cases of odontogenic myxoma as the control groups were examined for the detection of Wnt1 and β -catenin by immunofluorescent double staining.

Results: Histopathologically, ameloblastic fibromas were composed of dental papilla-like mesenchymal tissues and enamel organ-like epithelial nests. Ameloblastomas were enamel organ like tumor nests in then connective tissue stromal tissues. Odontogenic myxomas were composed of randomly oriented stellate, spindle-shaped and/or round cells. Immunohistochemistry, in cases of ameloblastic fibroma, Wnt1 were detected in almost epithelial and mesenchymal components. The peripheral columnar cells of epithelial nest were strongly positive to Wnt1. Furthermore, nuclear translocation of β -catenin was detected in both epithelial and mesenchymal cells, further in the cell membrane. In cases of ameloblastoma, Wnt1 and β -catenin were mainly present in the tumor nests. On the other hand, these expressions in the stroma were restricted. In cases of odontogenic myxoma, there were almost no Wnt1 and β -catenin positive reactions in the tumor cells.

Conclusion: In general, Wnt signaling is responsible for cytological regulation of cell fate, morphogenesis and/or development. This examination results suggest that Wnt signaling plays important roles in the tumorigenesis of ameloblastic fibromas through odontogenic epithelium-ectomesenchymal tissue interaction.

Biography

Toshiyuki Kawakami is the Chairman of Hard Tissue Pathology Unit, Department of Hard Tissue Research, Matsumoto Dental University, Graduate School of Oral Medicine. He is the Director of Matsumoto Dental University Librally, Director of Japanese Society of Oral Pathology, Director of Society of Hard Tissue Generative Biology, Academic Council of Japanese Society of Pathology, Academic Council of Japanese Association of Oral Biology and Academic Council of Japanese Stomatological Society. He has been serving as an Editor-in-Chief of the *Journal of Hard Tissue Biology*, published by the Hard Tissue Biology Network Association.

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