The Impact of the Notch Signaling Pathway on the Migratory Capacity and the Expression of E-cadherin and CyclinD1 in Ameloblastoma Cells

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Abstract

Objective: Ameloblastoma (AM) is a prevalent odontogenic epithelial tumor associated with cell signal transduction in its pathogenesis. This study aimed to explore the impact of the Notch signaling pathway on the migratory capacity of AM cells and the expression profiles of E-cadherin and cyclinD1 protein. *Methods:* In vitro cultures of AM cells and dental follicle (DF) cells were established. Transwell assays were conducted to assess cell migration and invasion, while Western blot analysis was employed to evaluate the protein expression levels of Notch1, E-cadherin, and cyclinD1. The inhibition of the Notch signaling pathway was achieved using FLI-06, allowing for comparative analysis of the migration and invasion abilities of AM and DF cells, alongside the expression levels of E-cadherin and cyclinD1 proteins in AM cells. *Results:* AM cells exhibited significantly enhanced migration capacity compared to DF cells ($P<0.05$). The expression levels of Notch1 and cyclinD1 were notably elevated in AM cells, whereas E-cadherin expression was markedly reduced ($P<0.05$). Following FLI-06 treatment, the migration capability of AM cells decreased significantly compared to the control group ($P<0.05$). Additionally, there was a significant reduction in the expression levels of cyclinD1 and Notch1 in AM cells, coupled with an increase in E-cadherin expression ($P<0.05$). *Conclusion:* The findings suggest the involvement of the Notch signaling pathway in AM cell migration, potentially mediated through alterations in E-cadherin and cyclinD1 protein expression.

Keywords

Notch Signaling Pathway, Ameloblastoma, Migration, E-cadherin, CyclinD1