

Detection and Prognostic implication of Molecular Pathways in Oral Cancer Progression

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Abstract

Statement of problem: Oral cancer is multifocal in origin demonstrating clonal evolution with intralesional generation of genomic structural variant cells and enhanced phenotypic heterogeneity. The cancer cells achieve selective clonal advantage with altered biological profiles as a cumulative outcome of genetic instability. Appropriate biomarkers need to be identified for early diagnosis of oral precancer cases with high probability of transformation into malignancy for appropriate therapeutic prominence.

Methodology and Theoretical Orientation

To analyze molecular mechanisms in progression of oral precancer and cancer cases in Indian population with therapeutic significance. A total of 80 cases of oral precancer and cancer were studied for genetic analysis of H-ras gene mutation and immunohistochemical expression of p53, pRb, E-cadherin, m-TOR, HIF-1 α and Bcl-2 in study cases. The cases were categorized based on staging of disease. Staining patterns and mutations observed were assessed and compared with that seen in oral cancer cases to predict transformation.

Findings

Molecular profiles of oral cancer and precancer cases showed array of alterations. Interestingly, the overall prevalence of H-ras mutations in our study groups was observed to be 29% in study cases. pRb, Bcl-2, m-TOR and HIF-1 α were upregulated and E-cadherin was downregulated in subset of oral cancer cases in Indian population.

Conclusion and significance

The present study highlights the role of these novel markers in early events of oral cancer progression. Detection of these molecular changes could provide clue to exploration of newer avenues in developing therapeutic strategies. We recommend targeted immunotherapies against these early molecular events seen especially in oral cancer in Indian population as an emerging field in clinical oncology.

Article Information

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