SDM
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# "QUANTIFICATION OF TELOMERASE ACTIVITY IN NORMAL ORAL MUCOSAL TISSUE AND ORAL SQUAMOUS CELL CARCINOMA"

BY

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# ABSTRACT

**Background & Objective:** The role of telomeres and telomerase in oral cancer is an area of much recent interest. The understanding of the role of telomere biology, the end replication problem leading to genomic instability and the reactivation of telomerase is absolutely critical to our understanding of oral cancer, and more so, to our ability of early diagnosis and developing novel therapies and cancer prevention approaches. The aim of the present study was to quantify telomerase activity in oral squamous cell carcinoma and normal oral mucosa and assess the role of telomerase as diagnostic and prognostic marker of oral malignancy.

**Methods:** We quantified telomerase activity in 45 patients with oral squamous cell carcinoma and 20 normal oral mucosal specimens using PCR-based telomeric repeat amplification protocol (TRAP) assay and compared it with the clinical status and grade of malignancy.

**Results:** TA was detected in 89% of malignant and 5% of normal oral mucosal tissue. The TA levels ranged from 0.28 to 6.91 (mean 2.05, SD 1.33) in OSCC and 0.21 to 1.09 (mean 0.54, SD 0.27) in normal oral mucosa. There was no relationship between TA levels and clinical stages, site of the lesion, history of adverse habits or sex of the patient. However, under WHO classification, there were significant differences ($P < 0.00$) between Grades I, II and III. Also increasing age of the patient significantly correlated with TA.

**Interpretation and Conclusion:** The results of the present study indicate that activation of telomerase activity is frequent in OSCC. Statistically significant difference in quantified telomerase levels of OSCC and normal oral mucosa ($P < 0.00$) demonstrate the significant clinical usefulness of telomerase activation as a valuable marker for diagnosis, while significant correlation of TA with grades of malignancy indicate its effectiveness as marker for prognosis of OSCC.

**KEYWORDS:** **Telomerase; Squamous cell carcinoma; Telomere; Biomarker**