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Shortening Telomere Lengths is a Predictor for Increased Risk of Oral Premalignant Lesion and Squamous Cell Carcinoma

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Backgrounds: Oral premalignant lesions (OPLs) are precursors of oral squamous cell carcinoma (OSCC). Short telomeres in peripheral blood leukocytes are associated with increased risks of several cancers. However, whether short leukocyte telomere length (LTL) predisposes to OPL and OSCC is unclear. **Materials and Methods:** LTLs were measured in PBLs of 266 patients with OPL (N=174) or OSCC (N=92) at diagnosis and 394 age- and gender-matched control subjects. The association between LTL and OPL or OSCC risk, as well as the interaction of telomere length, cigarette smoking and alcohol drinking on OPL or OSCC risk were analyzed. **Results:** The age-adjusted relative LTL was the shortest in OSCC (1.64±0.29), intermediate in OPL (1.75±0.43), and longest in controls (1.82±0.36) (P for trend < 0.001). When dichotomized at the median value in controls, adjusting for age, gender, smoking and alcohol drinking status, the odds ratio (OR) for OPL and OSCC risks associated with short LTL was 2.03 (95% CI = 1.29-3.21) and 3.47 (95% CI = 1.84-6.53), respectively, with significant dose-response effects for both associations. Among 174 OPL patients, 23 progressed to OSCC and the mean LTL was shorter than in progressors than non-progressors (1.66±0.35 vs. 1.77±0.44), although the difference did not reach statistical significance (P=0.258) likely due to the small number of progressors. Interaction analysis shows that short LTL, smoking, and alcohol drinking are independent risk factors for OPL and OSCC. **Conclusion:** Short LTL is associated with increased risks of developing OPL and OSCC and likely predisposes to the malignant progression of OPL patients.