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Serum biomarkers in oral squamous cell carcinoma

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Oral Cancer is the most common cancer in the Indian subcontinent mainly due to excessive use of smokeless tobacco and areca nut. Alteration in trace element profile and its modifying effects in the process of carcinogenesis warrants further investigation. The studies were designed to evaluate the levels of Selenium (Se), Molybdenum (Mo), Copper (Cu), Zinc (Zn) and Iron (Fe) in serum of patients of pre-cancer (Submucous Fibrosis, Leukoplakia and Squamous Cell Carcinoma (SCC)) and analyse the alterations of these parameters. An attempt was also made to identify predictors amongst these parameters for disease occurrence and progression. Cu/Zn ratio was also determined in pre-cancer and cancer. Correlation of age, gender, educational status, presence and duration of tobacco related practices brought forth stark socio-cultural challenges. Data analysis revealed serum levels of Mo and Se were significantly decreased in the pre-cancer and SCC groups. There was marked and progressive increase in copper levels in pre-cancer and SCC. Cu/Zn ratio was elevated in the cancer and pre-cancer groups. The levels of Fe were significantly decreased in pre-cancer and SCC groups. The levels of Zn were marginally elevated in pre-cancer and cancer. The potential predictors for disease occurrence and progression in pre-cancer group were serum Mo and Se. In the SCC, Cu, Mo & Se were identified as probable predictors for disease progression. Our studies show alteration of serum levels of Se, Mo, Cu, Zn, Fe in pre-cancer and SCC. An attempt was also made to identify these parameters as predictors for disease occurrence and progression. These serum biomarkers may be associated with pathogenesis of oral premalignant and malignant lesions and also serve as an additional tool for predicting the malignant potential of pre-cancer.

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