

SERUM BIOMARKERS IN CANCERS OF THE HEAD AND NECK

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Abstract: Cancers of the head and neck are now the most common cancer in the Indian subcontinent mainly due to excessive use of tobacco associated products. Epidemiological studies showed variable incidences. Tobacco is now an established environmental carcinogen and has been at large demonstrated as a risk factor in oral carcinogenesis. Many risk factors have a synergistic effect when combined and the relevance of mitigation measures are gaining importance in the public health sphere. Alteration in trace element profile and its modifying effects in the process of carcinogenesis warrants further investigation. The evaluation of these biomarkers has led to improvement of diagnostic and prognostic methods of tumour recurrence and metastasis to assess the progression of oral lesions. 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 precancer (Submucous Fibrosis, Leukoplakia and Squamous Cell Carcinoma (SCC)) and analyze the alterations of these parameters. It also aimed to identify predictors amongst these parameters for occurrence and progression of disease. Cu/Zn ratio was also assessed in precancer and cancer patients. Correlation of age, gender, educational status, presence and duration of tobacco related practices revealed the ground reality. Data analysis brought forth that the serum levels of Mo and Se were significantly decreased in the precancer and SCC groups. There was a marked and progressive increase in copper levels in precancer and SCC. Cu/Zn ratio was elevated in the cancer and precancer groups. The levels of Fe were significantly decreased in precancer and SCC groups. The levels of Zn were marginally elevated in precancer and cancer. The potential predictors for disease occurrence and progression in precancer group were serum Mo and Se. In the SCC, Cu, Mo & Se were identified as probable predictors for disease progression. Our studies series reveal alteration of serum levels of trace elements in precancer and cancers of the head and neck. 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 precancer.

Keywords: Molybdenum, Selenium, Oral Submucous Fibrosis, Oral Cancer