

Biomarkers in Early Detection of Oral Cancer

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Editorial

Prevention and early detection are key components of controlling the overburdened cases of mouth cancer. Mouth cancers are the 6th commonest cancer in the world with a high lethality rate. Even with technological advances happening around the globe, visual examination still remains the mostly practiced screening method for oral cancer. However, the visual screening method bears many limitations and scope for errors [1].

Presently, there are different methods for the oral cancer diagnosis, which includes physical examination, biopsy (oral brush biopsy), barium swallow test, etc.

This diagnostic improvement in molecular biology field has produced remarkable discovery and developed potential salivary biomarkers for the detection of oral cancers. Biomarkers are measurement and evaluation entities to identify the normal biological, pathogenic processes, or pharmacologic responses for a therapeutic intervention.

The biomarkers of oral cancer can be classified into 3 categories based on type of bio-molecules (DNA, RNA and Protein biomarkers), based on the state of disease (prediction, detection, diagnosis and prognosis biomarkers) and also based on other criteria (pathological, imaging and in silico biomarkers).

The most effective biomarkers for cancer are the ones which are used for prediction of alteration in malignancy (earliest), each stage cancer progression depiction (both genetical and molecular changes), monitoring of recurrence of cancer, development of drugs and determination of safety and efficacy of chemo-preventive agents.

Diagnosis of early oral squamous cell carcinoma (OSCC) is critical as the mortality rate is very high in later stage of the disease.

There are different protein biomarkers for the detection of OSCC. Some of these include Interleukin-6, 8, 1a, 1b, TNF- α (inflammatory in nature is an effective indicator of cancerous transformation from oral precancerous lesions to oral cancer). There are other markers like Cyfra and TPA that recognize the telomerase activity which are seen in tumor cells and are responsible for the maintenance of telomere length throughout the replication of chromosome.

The epidemiological markers Glutathione are useful in chemoprevention. The glutathione recognizes the risk of development of OSCC and other oral cancer types. IgG causes the apoptosis inhibition. The 11.4 kDa protein, family of calcium-binding proteins recognizes the early stage of OSCC. Moreover, the transferrin levels in saliva are considered to be associated with different stage of the cancer. Also, fibrin in OSCC is associated with different carcinogenic processes. Secretory leukocyte peptidase inhibitor is associated with OSCC treatment. Thioredoxin marks the elevation in the mRNA levels in oral cancers and also in other type of cancers. The other types including salivary zinc finger, -amylases are useful in the detection of OSCC (early stage) [2-5].

Biomarkers provide a potential approach to understand the dynamics of oral cancer with applications in screening and diagnosis and prognosis. In order to understand the relationship between calculated biological processes and laboratory outcomes it is important to expand the methods of treatments for all diseases.

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