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Mini Review

Salivary Biomarkers in Oral Cancer

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Abstract

This article describes the role of saliva in the diagnosis of oral cancers as we know oral cancer is the most common human malignancy. DNA, RNA and proteins discharged from cancer cells can be detected from saliva thus suggesting the prognosis of the disease. Actually saliva remains in direct contact with the oral cancerous lesion, so salivary diagnostic procedure is indeed a non-invasive method with excellent accuracy.

Keywords: Oral Cancer; Saliva; Biomarker

Introduction

As previously said that oral cancer is the sixth most common type of malignancy in human body, so early detection is mandatory. Till date, Biopsy of the specific region of the lesion was/even is the most reliable/accepted method for the diagnosis of precancer or oral cancer. But lots of factors are there i.e. high cost, proper equipments and the trained personnel etc might take time to make the report properly. Here comes the importance of saliva which is a body fluid, produced in mouth and gets direct contact with the oral lesions. Detection of oral cancer by salivary biomarkers can be non-invasive screening test with low cost and accurate result as its less technique sensitive.

Oral Cancer

It is one of the most common cancers globally. Now what is cancer? Cancer/Neoplasm can be defined as purposeless, uncontrolled, unco-ordinated growth of tissue resulting from multiplication of its cells. It can be benign or malignant; more than one million cases per year are reported in India. Oral cancers can occur anywhere in the mouth and may extend in neck region. Among them tongue carcinoma is the most common type and then comes the cancer in the floor of the mouth to next.

Risk factors – most importantly the cause which must be highlighted is the intake of Tobacco either in chewing form (areca nut, gutkha) or by smoking (cigarettes etc). Apart from that Genetic reason (familial aggregations), Inflammation (cytokines, TNFs, ILs), Infections (HPV), lack of nutrition, dental cause, immunosuppression's, UV-radiation. If not detected early, mortality rate may increase.

Saliva

Human saliva is a multi-constituent oral fluid secreted in oral cavity by salivary glands (majorly 3 types - Parotid, Submandibular and Sublingual). It contains 99% water and rests are inorganic and organic substances [pH-6-7, daily secretion 1-1.5 Lt]. Saliva can be used as a diagnostic tool in oral cancer patients because:

1. Easy to collect from oral cavity; so non-invasive procedure
2. Easy to store; so less technique sensitive
3. Reduces patient's anxiety and discomfort
4. Cost effective

Biomarkers

A natural substance or molecule which can be measured in the body, used as a biological parameter to detect the pathological or physiological condition/process/disease. There are many types of biomarkers like –DNA biomarker, mRNA biomarker, and protein or peptides biomarker, non-organic and miscellaneous types. Since last few years, many researches are going on these and reported that biomarkers significantly increase during malignancy. Its implications are:

1. Biomarkers can detect malignant transformation of oral mucosa
2. Genetical involvement
3. Molecular changes
4. Prognosis value of the disease

Sample Collections

The collection process of biomarkers from saliva is called as Molecular Signature. Lab analysis depends on sample volume, its structure, collection time. Technologies used are-liquid chromatography, electrophoresis, nuclear magnetic resonance, immunoassay etc.

Conclusion

This article describes briefly the role of tumour markers present in saliva that can be used as a diagnostic tool other than biopsy in case of oral cancers as saliva as a sample has many advantages over serum or blood discussed before. Many investigations are going on, more results are yet to come. Still what we can conclude that the molecular biomarkers present in saliva can be easily used as very good diagnostic tool in large population also for its sensitivity, specificity and accuracy for early diagnosis of oral cancers [1-5].

Conflicts of Interest

I have no conflicts of interest to disclose.

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