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Salivary Indicators in the Diagnosis of Cancer

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Introduction

The second leading cause of death in the United States is cancer. Until the tumors have already metastasized, its symptoms are often vague and absent. As a result, there is an urgent need to develop tools for cancer screening, early detection, diagnostics, staging, and prognostics that are quick, highly accurate, and non-invasive. The major and minor salivary gland secretions are the multi-constituent oral fluid that makes up saliva, which is primarily supplied by blood. Saliva may also contain blood-present molecules like DNA, RNA, proteins, metabolites, and microbiota. Because sample collection and processing are straightforward, cost-effective, precise, and do not aggravate patients, salivary diagnostics have recently received a lot of attention for the purpose of detecting particular biomarkers. We divide recent salivary candidate biomarkers for systemic cancers into the following categories based on their origin: types of microbial, genomic, transcriptomic, proteomic, and metabolomics data.

Description

A low-cost, non-invasive test that can provide useful information for disease diagnosis is saliva testing. Saliva collection has increased as we enter the era of genomic technologies and research. The human salivary proteome has been analyzed by recent proteomic platforms, which have identified approximately 3000 proteins and peptides with differential expression: More than 90% of the proteins in saliva come from the secretions of three pairs of "major" glands; Minor glands, gingival crevicular fluid, mucosal exudates, and oral microflora comprise all other components. Distinguishing between physiological and pathological conditions is the most common goal of proteomic analysis. There is currently no proteomic protocol for analyzing the entire saliva proteome. There are two distinct types of proteomic platforms: Top-down proteomics focuses on a protein's intact, naturally occurring structure; Peptide fragments are analyzed using bottom-up proteomics following pre-digestion (usually with trypsin). Numerous distinct biomarkers may be suggested for the same pathology because of this heterogeneity. Several diseases have been identified by the salivary proteome: oral squamous cell carcinoma and oral leukoplakia, chronic graft-versus-host disease Sjögren's syndrome, autoimmune disorders like SAPHO, schizophrenia and bipolar disorder, and genetic diseases like Down's syndrome and Wilson disease, among others According to the research presented here, human saliva will soon be a useful diagnostic fluid for clinical diagnosis and prognosis. Lung cancer (LC) has a terrible 5-year survival rate because only a small percentage of cases are discovered in an early and treatable stage. This demonstrates how urgently improved biomarkers for LC diagnosis, prognosis, and prediction are required. Lung tissue biopsied, blood, and plasma are frequently utilized for LC diagnosis and monitoring. Saliva has been found to be a useful biological sample for the early and noninvasive detection of oral and systemic diseases in a growing number of studies. However, little research has been done on the discovery of salivary biomarkers. An overview of the current understanding of salivary markers for LC detection and perspectives on future clinical significance are presented here, compiled from the available literature [1].

The metabolic (catalase activity, triene conjugates, and Schiff bases), inflammatory (interleukin 10, C-X-C motif chemokine ligand 10), proteomic (haptoglobin, zinc-2-glycoprotein, and calprotectin), genomic (epidermal growth factor receptor), and microbial candidates (Veillonella and Streptococcus) markers found in saliva have all been found to have diagnostic and prognostic potential in LC. These salivary markers may be useful for boosting LC patients' chances of survival and for earlier disease detection when used in conjunction with other well-established screening methods. The most promising biological sample for identifying and validating biomarkers in LC, according to the existing literature, is saliva. However, the most efficient way to use saliva for LC management in a clinical setting is still under investigation [2-5].

Conclusion

Chronic lymphocytic infiltration of the exocrine glands, particularly the salivary and lacrimal glands, is the underlying cause of Sjögren's syndrome (SS), a chronic autoimmune condition characterized by dry mouth and dry eyes. Even though the most common symptoms of SS are xerostomia and dry eyes, arthritis, parotid gland enlargement, interstitial lung disease, and lymphadenopathy can occur in 30–50 percent of patients. Periodontal disease, atrophy of the tongue papillae, abnormal taste sensation, oral ulcers, and changes in voice or taste can all occur in SS patients. SS can occur in people who have systemic sclerosis or chronic autoimmune diseases like rheumatoid arthritis (RA). Primary SS (pSS) is when SS occurs without these comorbid conditions. Non-Hodgkin lymphoma and mucosa-associated lymphoid tissue (MALT) lymphoma are both possible outcomes in SS patients. B cell hyperactivity and the production of autoantibodies against Ro/SS-A and La/SS-B are the primary pathogenic mechanisms. Pathological findings include the presence of CD4-positive lymphocytes, composed of B and T cells, infiltrating the glands in inflammatory lesions. Inflammation of the glands and the formation of the germinal centers are also exacerbated by an increase in proinflammatory cytokines or chemokines that mediate their recruitment and differentiation.

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Conflict of Interest

There are no conflicts of interest by author.

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