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Short Communication

Emerging salivary biomarkers for squamous cell carcinoma in the oral cavity: A brief overview

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ABSTRACT

Squamous cell carcinoma (SCC) in the oral cavity represents a significant health concern, demanding improved early diagnosis. Often it goes unnoticed in the oral cavity and is later detected only during multiple organ involvement. This brief review provides a concise exploration of the salivary biomarkers that hold immense promise for the early detection of oral Squamous cell carcinoma. With a focus on early detection that may revolutionize the management of this challenging disease and reduce future complications. This review focuses on the role of salivary biomarkers in early detection and planning a specific approach for the treatment of patients.

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1. Introduction

Oral squamous cell carcinoma (OSCC) is an aggressive malignancy with a global impact. Early detection and accurate diagnosis are essential for enhancing patient life expectancy. The conventional methods for diagnosis have limitations, emphasizing the need for novel approaches. Salivary DNA alterations, microRNA profiles, protein markers, and exosomal markers are among the newer options that may enhance our ability to diagnose OSCC in its early stages and predict its course more accurately. These salivary biomarkers offer a non-invasive and potentially more accessible method for early detection.¹⁻³

Detecting oral cancer in its early stages remains a critical goal in improving patient prognosis. This outlines the emergence of salivary biomarkers as a promising avenue for enhancing early detection methods. Saliva, often overlooked, is proving to be a valuable reservoir of information that could revolutionize our approach to identifying oral SCC.^{4,5}

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Emerging salivary biomarkers for early detection

1. Salivary DNA Alterations: Various studies have demonstrated that the detection of specific genetic alterations in salivary DNA, such as gene mutations or hypermethylation of certain genes, can serve as indicators of OSCC presence.
2. Salivary MicroRNA Profiles: Salivary microRNAs (miRNAs) have gained attention as potential early detection biomarkers. Unique miRNA profiles have been identified in OSCC patients' saliva, offering non-invasive diagnostic potential.
3. Salivary Proteins: Salivary proteins like Matrix Metalloproteinase-9 (MMP-9) have shown promise as diagnostic markers. Elevated MMP-9 levels in saliva have been associated with OSCC and may serve as an indicator of disease presence.
4. Salivary Exosomes: Exosomes derived from OSCC cells found in saliva can contain genetic material and proteins reflective of the tumor's status. Analysis of salivary exosomal markers, such as specific miRNAs and proteins, is emerging as a promising non-invasive

diagnostic avenue.^{3,6,7}

2. Conclusion

The early detection of oral squamous cell carcinoma continues to pose significant challenges, but emerging salivary biomarkers offer a promising option for improving the management of this disease. As this field of research evolves, clinicians and researchers need to stay updated on the latest findings and incorporate these emerging salivary biomarkers into clinical practice, potentially leading to better outcomes for patients with oral squamous cell carcinoma. Further studies and clinical validation are necessary to establish the clinical utility of these biomarkers fully.


3. Conflict of Interest

None.

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