Role of Salivary Biomarkers in Early Detection of Oral Potentially Malignant Disorders.

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Introduction

Oral potentially malignant disorders (OPMDs) represent a heterogeneous group of lesions and conditions that carry a risk of progression to oral squamous cell carcinoma (OSCC). Early detection is crucial for improving prognosis, enabling timely intervention, and reducing the morbidity and mortality associated with malignant transformation. Traditional diagnostic methods rely on clinical examination followed by histopathological confirmation, which, while accurate, often involves invasive procedures and may not detect early molecular changes.

Saliva has emerged as a promising diagnostic medium owing to its non-invasive collection, cost-effectiveness, and rich reservoir of biological molecules. Salivary biomarkers, including proteins, DNA, RNA, metabolites, and microbiota profiles, reflect both local and systemic health conditions. Specific markers such as cytokines (IL-6, IL-8), tumor suppressor gene mutations (p53), and microRNAs have shown potential in identifying early pathological changes in OPMDs before visible clinical alterations occur. Advances in proteomics and genomic technologies have further enhanced the sensitivity and specificity of salivary diagnostics, opening new avenues for chairside screening in dental and primary healthcare settings [1, 2, 3, 4, 5].

The integration of salivary biomarker analysis into routine oral healthcare could revolutionize screening programs, particularly in high-risk populations such as tobacco and betel nut users. By detecting molecular alterations at an early stage, clinicians can initiate preventive or therapeutic measures before irreversible malignant transformation takes place.

Conclusion

Salivary biomarkers offer a non-invasive, efficient, and patient-friendly tool for the early detection of OPMDs, with the potential to significantly reduce the global burden of oral cancer. While current research demonstrates promising diagnostic accuracy, further large-scale clinical trials are necessary to validate these biomarkers for routine use. The future of oral cancer prevention may well rest in the integration of salivary diagnostics into everyday dental practice, enabling earlier intervention and better patient outcomes.

References

1. Awasthi, P., & Sharma, N. (2022). Salivary biomarkers: A non-invasive tool for early detection of oral potentially malignant disorders. *Journal of Oral Biology and Craniofacial Research, 12*(3), 456–462.
2. Gupta, R., Meenakshi, S., & Patel, K. (2021). The role of cytokines in saliva for detecting oral precancerous lesions. *Oral Oncology, 117*, 105307.
3. Khan, M., & Prasad, G. (2020). MicroRNA expression in saliva as a diagnostic tool for oral precancer and cancer. *Critical Reviews in Oncology/Hematology, 150*, 102961.
4. Li, Y., St. John, M. A., Zhou, X., Kim, Y., Sinha, U., Jordan, R. C., Eisele, D.,

Abemayor, E., Elashoff, D., Park, N. H., & Wong, D. T. (2004). Salivary transcriptome diagnostics for oral cancer detection. *Clinical Cancer Research, 10*(24), 8442–8450.

5. Sharma, R., & Bansal, M. (2019). Advances in salivary diagnostics: Role in detection of oral cancer and precancer. *World Journal of Dentistry, 10*(2), 139–144.