How Saliva Testing Predicts Oral/Systemic Health

Gianna Pisano and Amber Ostrow
Farmingdale State College

Background

Saliva contains a high quantity of proteins that can be associated with many systemic and oral diseases. "Human saliva has a specific proteomic content that allows researchers to perform assays in order to discover novel saliva biomarkers associated with general health status." [2] Saliva is the most appealing diagnostic tool used to detect an early and accurate diagnosis. Oral health has a direct correlation with our systemic health, which is why saliva testing is crucial in detecting the early onset of diseases.[2] Salivary testing is the testing of saliva. This is an extremely beneficial screening tool to use for patients who might be predisposed to gingivitis, periodontitis, or other systemic conditions such as diabetes, HIV, cardiovascular diseases, autoimmune disorders, and oral cancer.

Salivary Testing for Oral/Systemic Health

Salivary testing has been used in studies as a diagnostic tool for oral squamous cell carcinoma based on the proteins, mRNA, and DNA found within saliva.[2] This can be extremely beneficial to obtain an early diagnosis as a high mortality rate is associated with a late diagnosis. [4] Regarding cardiovascular health, it has been shown that the salivary levels of IL-1β, IL-6, TNF-α, and prostaglandin E2 are more prevalent in atherosclerosis, suggesting that these cytokines could be a potential biomarker in the diagnosis of atherosclerosis.[2] Salivary testing can also reveal other conditions such as autoimmune disorders, Alzheimer's Disease, and many other conditions by identifying biomarkers. Saliva testing differs from blood testing based on cost effectiveness, multiple samples, obtained easily and less manipulation than a blood test.[2]

Croser, David. "Saliva Testing." *Nature News*, 10 Aug. 2020, www.nature.com/articles/s41404-020-0475-8.

Advantages of Salivary Diagnostics

- Non-invasive. [1]
- Easy to use. [1]
- Inexpensive and accessible. [1]
- A trained medical professional is not required. [1]
- Safe to administer due to no needles. [1]
- Multiple samples can be obtained. [1]
- Can be done at home. [1]
- Extremely efficient and widely accessible. [1]

Role of the Dental Hygienist

- Adequately educate the patient on the oral systemic connection.

- Efficiently administer screening tool.

- Refer patients out for further evaluation based on saliva testing results.

- Be familiar with handling characteristics.

- Answer any questions the patient may have about saliva testing.

- When conducting a salivary test, the Dental Hygienist as well as the patient should be aware that smoking confounds the salivary diagnostics of periodontitis and should be considered when interpreting the results. [3]
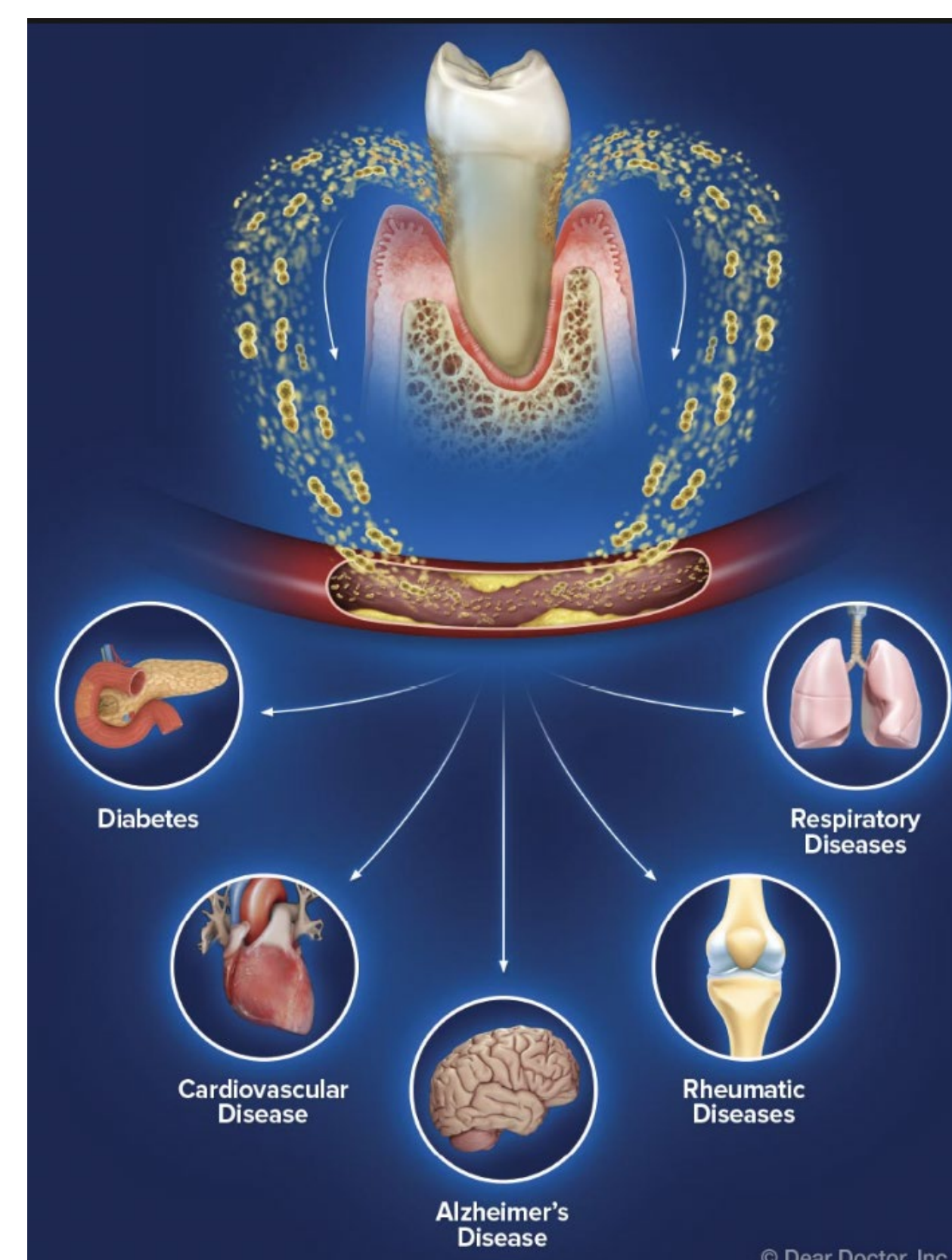
"Gum Disease & Systemic Health." *Gum Disease and Systemic Health*, www.deardoctor.com/articles/gum-disease-and-systemic-health/.

"Coast Dental Blog Gum Disease Linked to Heart Disease and Stroke." *Coast Dental & Orthodontics*, www.coastdental.com/blog/gum-disease-linked-to-heart-disease-and-stroke.

Conclusion

Salivary testing is an important diagnostic tool that is easily accessible and can be used in many dental offices. It can identify biomarkers in periodontal diseases as well as systemic conditions. Having such a powerful tool can give patients an insight into diseases or disorders they may be at risk for. As the Dental Hygienist we can educate our patients on the importance of the oral systemic connection. Salivary testing should be utilized in every dental office and should be patient specific. Salivary testing may be more beneficial for the elderly and pediatric population as it is less invasive than a blood test.

References

1 Javaid, M. A., Ahmed, A. S., Durand, R., & Tran, S. D. (2016). *Saliva as a diagnostic tool for oral and systemic diseases. Journal of Oral Biology and Craniofacial Research,* 6(1), 67-76. https://doi.org/10.1016/j.jobcr.2015.08.006

2 Roi, A., Rusu, L. C., Roi, C. I., Luca, R. E., Boia, S., & Munteanu, R. I. (2019). A new approach for the diagnosis of systemic and oral diseases based on salivary biomolecules. *Disease Markers,* 2019, 1-11. https://doi.org/10.1155/2019/8761860

3 Buhlin, K., Lahdentausta, L., Mantyla, P., Nieminen, M., Paju, S., Pietianen, M., Pussimen, P., Sinisalo, J., Sorsa, T., & Tervahartiala, T. (2018). Smoking confounds the periodontal diagnostics using saliva biomarkers. *Journal of Periodontology,* 90(5), 475-483.https://doi.org/10.1002/JPER.18-0545

4 Cassi, D., Ferrari, E., Meleti, Pertinhez, T., Pezzi, M., & Spisni, A. (2021). Salivary Cytokines as Biomarkers for Oral Squamous Cell Carcinoma: A Systematic Review. *International Journal of Molecular Sciences,* 22(13). https://doi.org/10.3390/ijms22136795