



Pg and Atherosclerosis

Source: J Periodontol Res 2011 Mar 21. doi: 10.1111/j.1600-0765.2011.01356.x.

Title: Porphyromonas gingivalis lipopolysaccharide (LPS) alters atherosclerotic-related gene expression in oxidized low-density-lipoprotein-induced macrophages and foam cells.

Author: Lei L, Li H, et al.

Overview: This study examined the effect of P gingivalis lipopolysaccharide endotoxins on the development of atherosclerosis. The aim of the study was to determine if Pg endotoxins affected the expression of atherosclerosis-related genes during and after the formation of foam cells, which aggregate in arterial walls to form atherosclerotic plaques.

Summary of research:

- Macrophages were treated with LDL cholesterol to induce foam cell formation
- P gingivalis LPS endotoxins were added to ox-LDL induced macrophages and foam cell cultures
- The expression of atherosclerosis-related genes were examined

Results and conclusions:

- P gingivalis endotoxins stimulated atherosclerosis-related gene expression in foam cells
- P gingivalis endotoxins also stimulated transcription of pro-inflammatory cytokines, adhesion molecules and growth factors among others
- P gingivalis LPS endotoxins appear to be a factor in the development of atherosclerosis by stimulating gene expression in both macrophages and foam cells.

Key take-aways:

Atherosclerosis (ASVD) is the accumulation of fatty plaques in arterial walls, and is the initiating event for heart attacks and strokes. The development of ASVD is initiated by an inflammation of the endothelial lining of an artery, followed by migration of macrophages into the intima media layer of the arterial wall where they scavenge LDL cholesterol molecules and become foam cells. The foam cells aggregate in the arterial wall and form atherosclerotic plaques. The authors concluded that the endotoxins of P gingivalis are directly involved in the development of ASVD by stimulating atherosclerosis-related gene expression. This is a significant development, adding more evidence to the relationship between perio pathogens and cardiovascular diseases.

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Implementation Strategies:

Since this research indicates that Pg, *in particular*, is directly involved in the development of atherosclerosis, we should be testing the saliva for the pathogen type and concentration of *all patients who have been diagnosed with periodontal disease as well as those with a strong family history of cardiovascular disease*. Salivary diagnostics is a critical step in understanding and evaluating the level of risk for each individual patient. The information gained from DNA-PCR, when coupled with any other risk factors present will provide the clinician with a solid scientific and evidence based foundation for diagnosis, prognosis, treatment planing and follow through.

Attempting to treat periodontal disease without first gathering all available objective and subjective data constitutes practicing below the standard of care. If you are not already utilizing the science of DNA-PCR visit oraldna.com today and get signed up.

I am sure you can also see how providing blood testing in the dental office goes hand in hand with salivary diagnostics for treating periodontal disease in order to reduce the risk of heart disease. If your patient has elevated CRP levels, HbA1c levels or a problematic metabolic profile, it is in the best interest of the patient to include finger-nick blood testing in your risk assessment process. For more information on blood testing in the dental office, visit hearthealthydentistry.com.

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