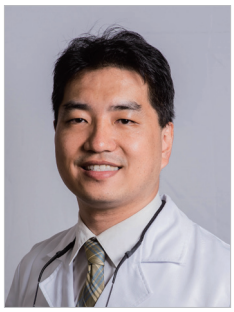
The Impact of Porphyromonas Gingivalis on Foam Cell Formation: Implications for the Role of Periodontitis in Atherosclerosis



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Periodontal diseases are inflammatory conditions that affect the periodontal tissue, resulting in soft tissue recession, bone loss, tooth loss, and a mild increase in systemic inflammatory factors. The development of periodontitis is associated with many pathogens, among which Porphyromonas gingivalis (P. gingivalis) plays a critical role. P. gingivalis can also degrade tissue and cause local and systemic pathologies. Recent studies suggest an association between P. gingivalis and various systemic diseases, including cardiovascular, cerebral, pulmonary, digestive, bone, and perinatal diseases. Atherosclerosis, a disease with significant cardiovascular complications, is particularly noteworthy among the mentioned systemic conditions.

Atherosclerosis is an inflammatory disease driven by lipids, which occurs due to the dysregulation of lipid metabolism. This leads to the accumulation of lipid droplets in the matrix beneath the endothelial layer of arteries. Foam cell formation is one of the major processes that plays a crucial role in the development of atherosclerosis. The elevation of cholesterol levels increases arterial permeability, leading to monocyte infiltration into the sub-endothelial layer where they differentiate into macrophages. Studies have shown that P. gingivalis can accelerate lipid peroxidation and the progression of atherosclerosis in the presence of oxLDL by infecting macrophages in the arterial intima layer. Studies have shown that P. gingivalis can accelerate lipid peroxidation and the progression of atherosclerosis in the presence of oxLDL by infecting macrophages in the arterial intima layer. Studies have shown that P. gingivalis can accelerate lipid peroxidation and the progression of atherosclerosis in the presence of oxLDL by infecting macrophages in the arterial intima layer. It is important to note that this is a subjective evaluation and further research is needed to confirm this hypothesis.

This role of foam cells in the initiation of atherosclerosis by forming a necrotic core in atherosclerotic plaques will be discussed. Additionally, it highlights the significance of Porphyromonas gingivalis (P. gingivalis), a periodontal pathogen, in this process. P. gingivalis, a prominent bacterial species in periodontal disease, can induce foam cells and initiate the process of atherosclerosis formation.