

Bidirectional Relationship Between Periodontal Disease and Chronic Kidney Disease and Need for Periodontal Therapy

Harman Shergill and Dr. Marc Nahmani

Periodontal disease caused by gram-negative bacteria leads to severe gum inflammation, periodontal pockets, and gum recession. Inflammatory markers of periodontal disease are associated with an increased risk of stroke, diabetes, cardiovascular disease, and chronic kidney disease. Chronic kidney disease is the gradual loss of kidney function and has been shown to impact oral mucosa and salivary glands negatively. Moreover, there is an established relationship between periodontal disease and a 5-10% decrease in kidney function capacity and a two-fold increase in the risk of chronic kidney disease. In this literature review, we investigate the bidirectional relationship between chronic kidney disease and periodontal disease and suggest the importance of periodontal therapy. Multiple studies were used to analyze the mechanism and relations of chronic kidney disease and periodontal disease with one another. We found that chronic kidney disease patients can face permanent bone degeneration, gum recession, and tooth loss due to phosphate and calcium metabolism dysregulation, leading to a high risk of periodontitis. Furthermore, patients undergoing hemodialysis were found to have increased dental calculus with high levels of serum phosphate. These findings indicate a higher concentration of phosphate and calcium in the saliva is linked to increased inflammation in periodontal diseases, and high phosphorus levels in urine are linked to systemic inflammation present in chronic kidney disease. Together, these data suggest that dysregulated phosphate metabolism is initiated when serum units have high phosphate levels. Therefore, this review advocates for periodontal treatment in patients with chronic kidney disease to reduce the systemic inflammatory response.