

The Physiological Mechanisms that Drive the Comorbidity of Diabetes Mellitus and Periodontal Disease

Abstract

Background:

In the United States, periodontitis and diabetes mellitus are two of the leading inflammatory diseases. The bidirectional association between the diseases have been confirmed; however, the mechanisms linking the two diseases are still unknown.

Description:

Through a critical review, the physiological mechanisms of diabetes mellitus and periodontal disease was discussed. Summarizing the findings of the articles, the three main mechanisms that drive the comorbidity of diabetes and periodontitis are pro-inflammatory mediators, insulin-signaling, and dysglycemia. Inflammation adversely affects the severity of periodontitis and diabetes. To understand the potential drivers of inflammation, the following mediators were analyzed: tumor necrosis factor (TNF), developmental endothelial locus (Del), and interleukin (IL). There is sufficient evidence that associates inflammation with altered insulin-signaling. When insulin-signaling is impaired, this can lead to a range of clinical manifestations that include insulin resistance. To understand the relationship diabetes plays in periodontitis, studies have been conducted to analyze the drivers of altered insulin-signaling, specifically the proinflammatory cytokine, TNF-alpha. The final mechanism, dysglycemia, refers to the irregularity in blood sugar levels. When blood sugar goes unregulated, the potential for issues regarding periodontitis and diabetes heightens.

Conclusion:

There is sufficient evidence that dysglycemia, insulin-signaling, and pro-inflammatory mediators drive the comorbidity of diabetes mellitus and periodontal disease. Furthermore, the findings shed light on the previous unknowns, and bring attention to the importance of preventative measures concerning oral and overall health.