Periodontitis and Diabetes Mellitus
Be True to Your Teeth
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It has been known for a very long time that functional dentistry and oral health impact longevity. At New Year's feasts in Japan, we eat “hagatame-mochi (teeth-hardening rice cake)” to wish for longevity with healthy teeth. Indeed, multiple epidemiological studies have suggested there are associations between tooth loss and mortality, as well as cardiovascular and cancer risks.1,3 Toth loss is mainly caused by periodontitis. Local periodontal infections that affect the supporting structures of teeth can promote a systemic inflammatory state by spreading pathogenic oral microorganisms to other organs, and increase the risks of a variety of diseases such as preterm birth, cardiovascular diseases, stroke, pulmonary diseases, and diabetes mellitus (DM). A particularly close and bidirectional relationship between periodontitis and DM has been reported, although there is no unique feature that is characteristic of periodontitis in patients with DM. It is established that DM is a major risk factor for periodontitis, and increases the prevalence, severity, and progression of periodontitis. Conversely, periodontitis increases insulin resistance, and aggravates glycemic control and diabetic complications in patients with DM.

Aoyama and colleagues,10 demonstrated that Porphyromonas gingivalis (P. gingivalis) was more prevalent in poorly-controlled DM patients than in well-controlled DM patients. There is a good evidence for the involvement of P. gingivalis in the promotion of systemic inflammatory responses and pathogenesis in animal models of DM,14,15 as well as vascular and left ventricular remodeling.16,17 P. gingivalis was more prevalent in poorly-controlled DM patients. In the study by Aoyama and colleagues,10 CRP levels were comparable between well-controlled and poorly-controlled DM patients, while clinical periodontal parameters were more severe in poorly-controlled DM patients. More sensitive and specific biomarkers for periodontal inflammation will be of clinical use to assess the impact of periodontitis on glycemic control and to predict the cardiovascular risks of DM patients complicated with periodontitis.

Aoyama and colleagues also demonstrated that Porphyromonas gingivalis (P. gingivalis) was more prevalent in poorly-controlled DM patients than in well-controlled DM patients. There is a good evidence for the involvement of P. gingivalis in the promotion of systemic inflammatory responses and pathogenesis in animal models of DM,14,15 as well as vascular and left ventricular remodeling. P. gingivalis was more prevalent in poorly-controlled DM patients. In the study by Aoyama and colleagues,10 CRP levels were comparable between well-controlled and poorly-controlled DM patients, while clinical periodontal parameters were more severe in poorly-controlled DM patients. More sensitive and specific biomarkers for periodontal inflammation will be of clinical use to assess the impact of periodontitis on glycemic control and to predict the cardiovascular risks of DM patients complicated with periodontitis.

The study of Aoyama and coworkers provides additional evidence for clinically important associations between DM and periodontitis. Dr. Jun-ichi Suzuki, my friend and coauthor of the paper by Aoyama and colleagues, sadly passed away on February 26, 2018. He was a great physician and scientist, who was admired by his colleagues and collaborators, and was always energetic.
Bidirectional relationship between diabetes mellitus and periodontitis. Diabetes mellitus impairs reparative processes by activation of RAGE and inflammatory cytokines, which exaggerate periodontal destruction by periodontal microorganisms such as *Porphyromonas gingivalis* (*P. gingivalis*). Conversely, periodontitis promotes a systemic inflammatory state, and exacerbates insulin resistance and glycemic control. Coexistent diabetes mellitus and periodontitis synergistically increase the risks of cardiovascular complications.

**Disclosures**

**Conflicts of interest:** None.

**References**


