Effect of a Comprehensive Oral Care Regimen for Periodontopathic Bacteria and Volatile Sulfur Compounds in Chronic Periodontitis Patients

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Abstract
Purpose: Major periodontopathic bacteria settle in all niches of the oral cavity of periodontitis patients, and spread throughout the oral cavity. The purpose of this study was to examine the microbiological effects of a comprehensive oral care regimen (brushing, flossing, gargling) on periodontopathic bacterial counts and the concentration of volatile sulfur compounds (VSC) in the palatine tonsils, tongue coating, and periodontal pockets of chronic periodontitis patients.

Methods: Forty-three chronic periodontitis patients were randomly divided into two groups (test group, N=23; control group, N=20), and the concentration of intraoral volatile sulfur compounds (VSCs) was measured and samples were collected in several niches of the oral cavity (palatine tonsil swabs, tongue coating, subgingival plaque). The test group continuously underwent a three-step regimen (brushing, flossing, gargling), and the control group continuously underwent conventional mouth cleaning (brushing only). Measurements and sampling were performed again after 4 weeks. Periodontopathic bacterial counts were quantified using a modified Invader Plus assay, and VSC concentrations were measured by simple gas chromatography.

Results: In the test group, the total bacteria (p<0.05), Prevotella intermedia (p<0.01), and Tannerella forsythia (p<0.05) counts of the palatine tonsil swabs decreased significantly. In addition, the total bacteria (p<0.05) and T. forsythia (p<0.05) counts of the periodontal pockets also decreased significantly. There were no significant differences in any of the species or sites in the control group. A significant reduction in the number of individuals showing values above the methyl mercaptan olfactory threshold level was exhibited in the test group (p<0.05). There were no significant differences of H2S and CH3SH in the control group, and H2S in the test group.

Conclusion: The comprehensive oral care was effective in reducing bacterial counts in the tonsils and periodontal pockets, and CH3SH concentrations.

Key words: Comprehensive oral care, Periodontopathic bacteria, Volatile sulfur compounds