Brushing your teeth could prevent heart disease

November 1 2013

Taking care of your gums by brushing, flossing, and regular dental visits could help hold heart disease at bay. Researchers at Columbia University's Mailman School of Public Health have shown for the first time that as gum health improves, progression of atherosclerosis slows to a clinically significant degree. Findings appear online in the *Journal of the American Heart Association*.

Artherosclerosis, or the narrowing of arteries through the build-up of plaque, is a major risk factor for heart disease, stroke, and death.

"These results are important because atherosclerosis progressed in parallel with both clinical periodontal disease and the bacterial profiles in the gums. This is the most direct evidence yet that modifying the periodontal bacterial profile could play a role in preventing or slowing both diseases," says Moïse Desvarieux, MD, PhD, lead author of the paper and associate professor of Epidemiology at the Mailman School.

The researchers followed 420 adults as part of the Oral Infections and Vascular Disease Epidemiology Study (INVEST), a randomly sampled prospective cohort of Northern Manhattan residents. Participants were examined for periodontal infection. Overall, 5,008 plaque samples were taken from several teeth, beneath the gum, and analyzed for 11 bacterial strains linked to periodontal disease and seven control bacteria. Fluid around the gums was sampled to assess levels of Interleukin-1β, a marker of inflammation. Atherosclerosis in both carotid arteries was measured using high-resolution ultrasound.

Over a median follow-up period of three years, the researchers found that improvement in periodontal health—health of the gums—and a reduction in the proportion of specific bacteria linked to periodontal disease correlated to a slower intima-medial thickness (IMT) progression, and worsening periodontal infections paralleled the progression of IMT. Results were adjusted for potential confounders such as body mass index, cholesterol levels, diabetes, and smoking status,

Clinical Significance

There was a 0.1 mm difference in IMT change over three years among study participants whose periodontal health was deteriorating compared with those whose periodontal health was improving. Previous research has shown that a .033 mm/year increase in carotid IMT (equivalent to approximately 0.1 mm over three years) is associated with a 2.3-fold increased risk for coronary events.

"When it comes to atherosclerosis, a tenth of a millimeter in the thickness of the carotid artery is a big deal. Based on prior research, it appears to meet the threshold of clinical significance," says Tatjana Rundek, MD, PhD, a co-author of the study and professor at the University of Miami whose lab read the carotid ultrasounds.

Even subtle changes to periodontal status had a dose-response relationship to carotid IMT. "Our results show a clear relationship between what is happening in the mouth and thickening of the carotid artery, even before the onset of full-fledged periodontal disease," says co-author Panos N. Papapanou, DDS, PhD, professor of Dental Medicine at Columbia University's College of Dental Medicine, whose laboratory assessed the bacterial profiles in the gums. "This suggests that incipient periodontal disease should not be ignored."

Bacteria in the mouth may contribute to the onset of atherosclerosis in a number of ways, scientists speculate. Animal studies indicate that they may trigger immune response and high levels of inflammatory markers, which may initiate or exacerbate the inflammatory aspect of atherosclerosis.

The results build on previous findings. In earlier cross-sectional results, Dr. Desvarieux and colleagues had reported that higher levels of disease-causing bacteria were associated with thicker IMT. The current study takes the next step by looking at the cohort over time.

"Our results address a gap identified in the AHA statement on periodontal disease and atherosclerosis, by providing longitudinal data supporting this association," says study co-author Ralph Sacco, MD, professor and chairman of Neurology at the University of Miami, Miller School of Medicine and former president of the American Heart Association. Concludes Dr. Desvarieux, "It is critical that we continue to follow these patients to see if the relationship between periodontal infections and atherosclerosis carries over to clinical events like heart attack and stroke and test if modifying the periodontal flora will slow the progression of atherosclerosis."

Provided by Columbia University's Mailman School of Public Health

Citation: Brushing your teeth could prevent heart disease (2013, November 1) retrieved 24 April 2024 from https://medicalxpress.com/news/2013-11-teeth-heart-disease.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.