

Good dental hygiene may help prevent heart infection

9 June 2008

Good dental hygiene and health may be crucial in preventing heart valve infection, according to research reported in *Circulation: Journal of the American Heart Association*.

In a study of 290 dental patients, researchers investigated several measures of bacteremia (bacteria released into the bloodstream) during three different dental activities – tooth brushing, a single tooth extraction with a preventive antibiotic and a single tooth extraction with a placebo.

As expected, researchers found bacteria in the blood more often with the two extraction groups than with the brushing group. However, the incidence of bacteremia from brushing was closer to an extraction than expected. "This suggests that bacteria get into the bloodstream hundreds of times a year, not only from tooth brushing, but also from other routine daily activities like chewing food," said the study's lead author Peter Lockhart, D.D.S.

In 2007, the American Heart Association modified its recommendation that preventive antibiotics be used prior to most dental procedures for the great majority of those at risk for infective endocarditis (IE) – a rare but life-threatening infection of the lining of the heart or heart valve that can occur when bacteria enter the bloodstream. The association now recommends preventive antibiotics only for patients at the highest risk for a bad outcome from IE.

In this double-blind, placebo-controlled study, researchers sought to determine if daily dental activities like tooth brushing posed as much risk for IE as major dental procedures (e.g., tooth extractions) for which preventive antibiotics might be prescribed. Researchers drew blood from each patient a total of six times – before, during and after these interventions – and analyzed the samples for bacterial species that are associated with IE.

They found that bacteria enter the bloodstream in most patients early on during a dental extraction or tooth brushing, and that bacteria can still be found in the blood as long as an hour after these procedures in a small number of cases.

"While the likelihood of bacteremia is lower with brushing, these routine daily activities likely pose a greater risk for IE simply due to frequency: that is, bacteremia from brushing twice a day for 365 days a year versus once or twice a year for dental office visits involving teeth cleaning, or fillings and other procedures," said Lockhart, chair of the Department of Oral Medicine at the Carolinas Medical Center, Charlotte, N.C.

"For people who are not at risk for infections such as IE, the short-term bacteremia is nothing to worry about," he said.

"If you stop oral hygiene measures, the amount of disease in your mouth goes up considerably and progressively and you'll have far worse oral disease," Lockhart said. "It's the gingival (gum) disease and dental caries (decay), that lead to chronic and acute infections such as abscesses. It's that sort of thing that puts you at risk for frequent bacteremia and presumably endocarditis if you have a heart or other medical condition that puts you at risk."

"The incidence of IE-related bacteremia from all blood draws was 23 percent in the tooth-brushing group, 33 percent in the extraction plus antibiotic group, and 60 percent for the extraction-placebo group," Lockhart said. The researchers therefore found that amoxicillin significantly decreased the incidence of bacteremia from an extraction but did not eliminate it altogether.

The highest incidence of positive IE-related bacterial cultures occurred within five minutes of all three procedures, with the majority (93 percent) of patients with bacteria in the blood experiencing the

condition for less than 20 minutes after the procedures. Only 5 percent of the extraction-placebo group and 2 percent of the brushing group still had bacteria in the blood at one hour.

"The human mouth is colonized by a larger variety of bacteria than any other body area, and many of the bacterial species in the mouth that cause disease are found in the periodontal pocket (below the gum line) adjacent to the teeth," said Lockhart, adding that some of those species have been associated with IE. "Bacteria commonly gain entrance to the circulation through ulcerated gingival (gum) tissue surrounding the teeth, but oral hygiene reduces gingival disease and reduces that risk."

Patients in this study came to an urgent care clinic in need of tooth extractions. So it's likely they had a higher level of dental disease and poorer oral hygiene than the general population.

The researchers are analyzing additional data from this study to determine if there is a direct correlation between the level of dental disease and the likelihood of IE bacteria getting into the bloodstream.

According to the American Heart Association, those at highest risk for adverse outcomes from IE are 1) patients with a prosthetic cardiac valve or prosthetic material used for cardiac valve repair; 2) previous endocarditis; 3) cardiac transplantation recipients who develop cardiac valve abnormalities; and 4) congenital heart disease for unrepaired cyanotic congenital heart disease, including palliative shunts and conduits; completely repaired congenital heart defect with prosthetic material or device, during the first six months after the procedure; or repaired congenital heart disease with persisting leaks or abnormal flow at the site or adjacent to the site of a prosthetic patch or prosthetic device.

Source: American Heart Association

APA citation: Good dental hygiene may help prevent heart infection (2008, June 9) retrieved 5 May 2021 from <https://medicalxpress.com/news/2008-06-good-dental-hygiene-heart-infection.html>

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