

Need for Preprocedure Antibiotics Questioned

'Maintaining good oral health and hygiene appears to be more protective than prophylactic antibiotics.'

BY HEIDI SPLETE
Senior Writer

Most patients with heart conditions don't need to take antibiotics to reduce the risk of infection prior to a dental procedure, according to revised American Heart Association guidelines.

The new guidelines represent a change from previous recommendations, which advised that patients with any heart abnormality, from mild valve prolapse to severe birth defects, should take amoxicillin prior to a dental procedure to reduce the risk of developing infective endocarditis (IE), an infection of the heart's valves or inner lining.

Many types of fungi and bacteria can cause the infection, and dental procedures had been seen as opening the door for these organisms to attack vulnerable patients.

But the guidelines writing group, led by Dr. Walter Wilson of the Mayo Clinic in Rochester, Minn., reviewed the latest research and found no significant evidence that taking antibiotics before a dental procedure prevents IE in patients who are at risk for infections (doi:10.1161/circulationaha.106.183095).

In addition, no prospective randomized placebo-controlled studies have shown that antibiotic use prior to a dental procedure prevents IE, although research in this area is limited by the range of dental procedures and overall low incidence of IE. And daily activities such as toothbrushing and flossing cause transient bacteremia, and far more frequently than dental procedures.

In fact, severe adverse events resulting from IE are associated with only a small subgroup of cardiac conditions, the writing group noted, and these patients should continue to receive antibiotics prior to dental procedures.

The cardiac patients who should continue to receive antibiotics prior to dental procedures because of their increased risk for severe complications from IE are those with prosthetic cardiac valves or previous episodes of infective endocarditis, and heart transplant patients who have developed abnormal cardiac valves.

In addition, patients with cardiac disease who meet the following criteria should continue to receive antibiotics prior to dental procedures:

► Patients with repaired congenital heart disease (CHD) who have remaining de-

fects at or near the site of a patch or prosthetic that inhibit the healing of the heart vessels' inner surfaces.

► Patients with unrepaired cyanotic CHD, including those with palliative shunts or conduits.

► Patients with repaired CHD with no remaining defects who are within 6 months of the procedure (because the inner vessel surfaces are still healing).

The patients who meet the criteria for increased IE risk should receive antibiotics prior to any dental procedure that involves work on the gums, the apex of the tooth, or perforation of oral mucosa. The guidelines apply to children as well as adults and have been endorsed by the Infectious Diseases Society of America and the Pediatric Infectious Disease Society as well as approved by the American Dental Association.

The preexisting guidelines for antibiotics use to prevent IE were last revised in 1997, and they called for 2 g of amoxicillin to be given orally 1 hour before a procedure.

But amoxicillin use carries risks of its own, including fostering the development of amoxicillin-resistant organisms, and data have not supported any reduced risk

of IE as a result of prophylactic antibiotic use prior to dental procedures.

The new guidelines emphasize that antibiotic use should be based on the odds of a heart patient having a severe adverse reaction if he or she developed IE, rather than lumping all heart patients together as being at increased risk for IE.

"In fact, maintaining good oral health and hygiene appears to be more protective than prophylactic antibiotics," Dr. Wilson said in a statement. Dr. Wilson had no financial disclosures related to his work on the guidelines.

Similarly, only cardiac patients who meet the above criteria need to receive antibiotics prior to respiratory tract, skin, or musculoskeletal procedures, and antibiotic use only to prevent IE is no longer recommended for any cardiac patients prior to gastrointestinal procedures, according to the new guidelines.

Physicians might need to reassure patients with heart conditions other than the high-risk conditions specified in the guidelines that their risk for developing IE is low, and remind them that the ability of antibiotics to reduce the risk of IE is equally low, the writing group noted. ■

Antibiotic use should be based on the odds of an individual having a severe reaction if IE develops, rather than lumping all heart patients together.

Bacteremia From Toothbrushing May Cause Endocarditis

BY BRUCE JANCIN
Denver Bureau

NEW ORLEANS — Two minutes of toothbrushing commonly produces bacteremia involving a similar spectrum of infective endocarditis-causing pathogens as tooth extraction, Peter B. Lockhart, D.D.S., reported at the annual scientific session of the American College of Cardiology.

This new finding from a randomized, controlled trial suggests that brushing teeth may represent a far greater risk for in-

fective endocarditis than the office dental procedures for which at-risk individuals are regularly prescribed prophylactic antibiotics. After all, people brush their teeth hundreds of times per year, resulting in far greater cumulative exposure to bacteremia, added Dr. Lockhart of the Carolinas Medical Center, Charlotte, N.C.

He reported on 290 patients in need of a dental extraction, which is considered to be the most invasive dental procedure and therefore the one most likely to produce bacteremia.

The subjects were randomized to extraction 1 hour following prophylactic amoxicillin, extraction with placebo, or 2 minutes of teeth brushing using a new toothbrush. Six venous blood draws were obtained from each participant starting 1 hour before the oral surgery or hygienic brushing, with the final sample being drawn 60 minutes after the end of the procedure. All of the bacterial isolates underwent genetic sequenc-

ing for species identification.

Bacteremia arising from toothbrushing was a common event, not entirely surprising given that brushing the teeth disrupts a much larger surface area of gingival tissue than a tooth extraction, Dr. Lockhart noted.

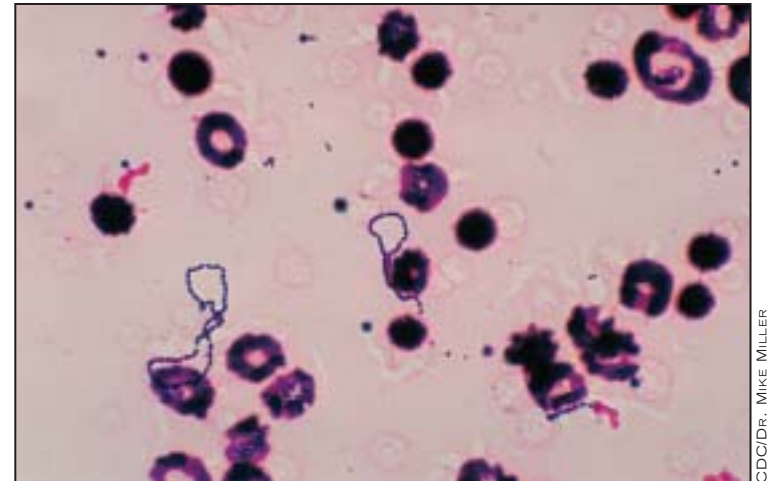
The overall incidence of bacteremia was 32% in the toothbrushing group, 56% in the extraction-plus-amoxicillin group, and 80% for extraction with placebo. Thus, amoxicillin prophylaxis was significantly more effective than placebo.

A total of 127 different bacterial species were identified, by far the most common being the viridans streptococci.

Dr. Patrick T. O'Gara commented that this study challenges traditional thinking regarding empiric antibiotic prophylaxis for dental procedures in patients at risk for infective endocarditis.

"Our thinking should change regarding the efficacy and need for antibiotic prophylaxis," he declared.

"Why should prophylaxis be provided for extractions only, if the cumulative risk of toothbrushing is actually higher? It wouldn't seem feasible or ap-



Streptococcus viridans causes about half of all cases of bacterial endocarditis, but is also part of the mouth's normal bacterial flora.

propriate that we instructed our patients to use antibiotics each time they brush their teeth," added Dr. O'Gara, director of clinical cardiology and vice-chairman of medicine for clinical affairs at Brigham and Women's Hospital, Boston.

The study provides a mechanism that explains a phenomenon many clinicians have observed: namely, that it's far more common for patients with viridans streptococci endocarditis to not have a history of a recent trip to the dentist than to have such a history, he added.

A key implication of Dr. Lock-

hart's study, Dr. O'Gara continued, is the need to stress to patients at risk for infective endocarditis the importance of practicing meticulous dental and oral hygiene. The goal in doing so is to reduce their cumulative risk of bacteremia generated by daily home-based tooth and gum care.

Since the presentation of these results, the American Heart Association has issued revised guidelines on prophylactic antibiotics (see accompanying story). Dr. Lockhart was a member of the writing committee, and Dr. O'Gara was a reviewer. ■

