

Digestive byproduct may predict greater risk of death among PAD patients

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Patients with high blood levels of a digestive byproduct and narrowing of the arteries away from the heart (peripheral artery disease or PAD) were significantly more likely to die within five years than PAD patients with lower levels, according to new research in *Journal of the American Heart Association*, the Open Access Journal of the American Heart Association/American Stroke Association.

The digestive byproduct, trimethylamine N-oxide (TMAO) is produced by gut bacteria breaking down red meat, eggs, and other meat products found in the traditional Western diet. Previous research has associated TMAO with narrowing of the heart's arteries, or coronary artery disease. Here, researchers investigated how TMAO levels may affect PAD patients.

"Improving our understanding of the functional changes that link gut microbes with PAD development, may help us improve the selection of high-risk PAD patients, with or without significant coronary artery disease, who likely need more aggressive and specific dietary and medical therapy," said W. H. Wilson Tang, M.D., study lead author and a professor in medicine at the Cleveland Clinic in Ohio.

Researchers studied 821 patients with PAD (average age 66; 66 percent men), who received a screening test for coronary artery disease and blood tests to determine TMAO levels, at the Cleveland Clinic. Participants were followed for five years between 2001 and 2007.

They found that the incidence of both short- and long-term death progressively increased as blood levels of TMAO rose among patients with PAD. Compared to patients with the lowest levels, those with the highest levels of TMAO were 2.7 times more likely to die of any cause during the course of the five-year study. Although these results do not prove that high TMAO levels caused the deaths, they do demonstrate an association.

"TMAO testing is available for clinical use, and these findings point to the potential for TMAO to help improve selection of high-risk PAD patients," Tang said. "Since people who are vegetarian or vegan or who follow the Mediterranean diet have been reported to have lower TMAO levels, more aggressive dietary counseling in patients with high TMAO levels is warranted."

According to the American Heart Association, about 8.5 million Americans have PAD, which occurs when fat and other substances accumulate in the arteries of the legs, arms, head, or abdomen, restricting or blocking blood flow. The legs are affected most often, and common symptoms include pain or cramping during walking or other movement that disappear with rest, although some people have no symptoms at all. Fortunately, PAD often can be treated with lifestyle changes, such as stopping smoking; increasing exercise; losing weight; controlling high blood pressure, cholesterol, and sugar; and eating a heart-healthy diet.

Researchers said participants in their single-center study may have had a greater incidence of [coronary artery disease](#) compared to the general population since they were referred for artery screening.

Provided by American Heart Association

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