

Common early sign of cardiovascular disease also may indicate cancer risk, study finds

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A Mayo Clinic-led study involving 488 cardiac patients whose cases were followed for up to 12 years finds that microvascular endothelial dysfunction, a common early sign of cardiovascular disease, is associated

with a greater than twofold risk of cancer.

The study, published in the *European Journal of Preventive Cardiology*, finds that microvascular endothelial dysfunction may be a useful marker for predicting risk of solid-tumor cancer, in addition to its known ability to predict more advanced cardiovascular [disease](#), says Amir Lerman, M.D., a Mayo Clinic cardiologist and the study's senior author.

"The study demonstrated that noninvasive vascular function assessment may predict the future development of cancer," says Lerman, who is director of cardiovascular research at Mayo Clinic. "More studies are needed, but assessment of vascular function potentially may predict individuals at risk."

Microvascular endothelial dysfunction involves damage to the walls of small arteries in the heart, which affects their ability to expand and limits the flow of oxygen-rich blood. Hypertension, high cholesterol, obesity and diabetes are among the causes, and symptoms of dysfunction include chest pain. The condition is treatable but difficult to detect.

The study reviewed the cases of 488 patients who underwent microvascular endothelial function assessment at Mayo Clinic between 2006 and 2014. The noninvasive procedure, called reactive hyperemia peripheral arterial tonometry, measures blood flow to the fingers during blood pressure inflation and release.

Dysfunction was defined as a tonometry index at or below 2, and the median follow-up period was six years. Of 221 patients identified as having dysfunction, 9.5% were diagnosed with solid-tumor cancer during the follow-up period. This compared with 3.7% of patients who had a tonometry index above 2. The findings were consistent after adjusting for age, gender, coronary artery disease and other factors.

The association between microvascular endothelial dysfunction and cancer was independent but more prominent among men and in patients with factors such as hypertension, significant [coronary artery disease](#), smoking and obesity."

This abnormal activity should alert clinicians not only to the risk of cardiovascular disease but to malignancy, as well," Lerman says. "This risk prediction appears to precede the development of disease by more than five years."

Patients with microvascular endothelial dysfunction tend to have other [health issues](#), as well, and that may have drawn more [medical attention](#) to these patients, resulting in higher levels of incidental detection of cancer, according to the study. Whether improvement in dysfunction translates into a reduced risk of cardiovascular disease and cancer remains to be determined."

Similarly, the mechanism underlying the association between microvascular endothelial dysfunction and [cancer](#) needs to be defined in future studies," Lermansays.

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