Medical Xpress

Precision medicine and the prevention of cardiovascular disease on older Americans

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Knowing your risk for cardiovascular disease is a critical first step to preventing heart attack, stroke and other life threatening cardiac events. However, the current recommended risk-assessment guidelines have limitations when it comes to older adults, and there is confusion for both physicians and patients about how aggressive treatment for common risk factors like blood pressure and cholesterol in older individuals should be.

Since age is the single biggest risk factor for developing cardiovascular disease, a team of preventive cardiologists at Baylor College of Medicine have found that by adding screening for certain biomarkers to the traditional risk factors of heart diseases, doctors may be able to more accurately determine risk for future heart events, including heart failure, in the increasing population of older Americans.

The findings, which appear in the current online edition of the *Journal of the American College of Cardiology*, also may help doctors to more precisely tailor treatment to higher risk individuals who require more intensive therapy and potentially to avoid treatment with multiple medications and side effects in lower risk individuals who may not need intensive therapy.

Dr. Anum Saeed, a clinical postdoctoral fellow in cardiovascular disease prevention (lipids and atherosclerosis) at Baylor and the lead author on the study, will present her findings at the American College of Cardiology 67th Annual Scientific Session & Expo where this study has been chosen as a finalist for the American College of Cardiology Young

Investigator Award in Clinical Investigations.

The Pooled Cohort Equation (PCE) has been the standard guideline-recommended method by the American College of Cardiology and the American Heart Association to estimate the likelihood a person will experience an atherosclerotic cardiovascular disease event such as stroke or heart attack in the next 10 years.

"What we are seeing is that older adults are an increasing part of our population, and heart failure is a leading cardiac event among these individuals. Knowing this risk is important because doctors can work with their patients to determine if lifestyle changes or medications are needed as well as discuss the potential benefits and risks of therapies," Saeed said. "However, the PCE does not include risk assessment for heart failure and was not designed to be used in individuals who were over the age of 79, so a 10-year time frame might not be as relevant for that group. A method to assess for short-term risk prediction, which includes the risk for heart failure, heart attack and strokes, may be a better model moving forward to inform preventive strategies."

Saeed, along with the senior author of the study, Dr. Christie Ballantyne from Baylor College of Medicine and their collaborators from the Michael E. DeBakey Veterans Affairs Medical Center, Johns Hopkins University, Wake Forest University and the University of Texas-Southwest Medical Center, began a study targeting this age group by including three biomarkers to the PCE that have been shown to help predict cardiovascular events and are currently available for clinical use. Those included N-terminal pro-B-type natriuretic peptide, high-sensitivity cardiac troponin T and high-sensitivity C-reactive protein.

Using participants in their 70s and 80s enrolled in the Atherosclerosis Risk in Communities (ARIC) study, it was found that the most frequent cardiovascular event was heart failure hospitalization, and by adding all

three biomarkers, the prediction of risk was significantly improved for not only heart attacks and strokes, but also for heart failure. The ARIC study is an ongoing, long-term study (dating back 30 years) in four communities in the United States designed to investigate the causes of atherosclerosis and its clinical outcomes.

"We showed that each biomarker improved risk prediction of not only heart failure but other cardiovascular events. However, with the addition of all three we showed the largest improvement in risk prediction for what we are calling global cardiovascular disease events, which include stroke, coronary heart disease and heart failure," Saeed said. "By improving prediction, our goal is to improve on the initiation and intensity of preventive efforts and strategies, which has the potential to improve healthcare costs."

Ballantyne, professor of medicine and chief of the section of cardiology at Baylor, added that, "One of the goals for precision medicine is to find new approaches to more precisely identify individuals who are at risk for cardiovascular events who may need lifestyle changes and/or drug therapy and also to identify individuals at low risk who may be able to use lower doses of medicine or fewer medications, which will reduce both cost and side effects. We believe that these simple blood tests have great promise in older adults and additional research is needed to confirm and extend these findings."

Provided by Baylor College of Medicine

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