Certain biomarkers appear to increase risk of death for elderly patients with heart failure symptoms

May 24 2011

Elderly patients with symptoms of heart failure and increased concentrations in the blood of the biomarker copeptin, or a combination of elevated concentrations of copeptin and the biomarker NT-proBNP, had an associated increased risk of all-cause death, according to a study in the May 25 issue of *JAMA*.

"A central part in evaluation of elderly patients with symptoms of heart failure is to identify simple tools that can aid the clinician in identifying high-risk and low-risk patients. Combining a biomarker produced locally in the myocardium [the muscle tissue of the heart] with a marker produced centrally in the body may be useful in patients with symptoms of heart failure. Studies have consequently tried to establish the clinical use of different markers in the circulation," the authors write.

One such established marker is B-type natriuretic peptide and the N-terminal fragment of its precursor (NT-proBNP). Vasopressin is a non-cardiac plasma marker of cardiovascular disease. The plasma concentration of vasopressin increases in patients with heart failure and is associated with left ventricular dysfunction. Copeptin has emerged as a potential surrogate marker for measurement of vasopressin concentration and may help identify patients with heart failure at high and low risk of death, according to background information in the article.

Urban Alehagen, M.D., Ph.D., of Linkoping University, Linkoping, Sweden and colleagues evaluated the association of combined measurement of plasma copeptin and NT-proBNP concentrations with mortality in an elderly primary care population with symptoms of heart failure. The study included 470 elderly patients in Sweden with heart failure symptoms between January and December 1996. Clinical examination, echocardiography, and measurement of peptide concentrations were performed, with follow-up through December 2009.

During a median (midpoint) follow-up of 13 years, there were 226 deaths from all causes, including 146 cardiovascular deaths. The mortality distribution across the different measures of copeptin segmented into quartiles (fourths) ranged from 26.5 percent (first quartile) to 46.6 percent (fourth quartile) for cardiovascular mortality and from 38.5 percent (first quartile) to 69.5 percent (fourth quartile) for all-cause mortality. The corresponding distribution for NT-proBNP was 15.9 percent (first quartile) to 56.9 percent (fourth quartile) for cardiovascular mortality and between 28.3 percent (first quartile) to 75.9 percent (fourth quartile) for all-cause mortality.

In models comparing the second, third, and fourth quartiles against the first quartile of the biomarkers, concentrations of copeptin and NT-proBNP were associated with long-term all-cause mortality, both separately and in combination. Similar results were obtained in models examining cardiovascular mortality. Analysis of data showed all-cause mortality associated with different combinations of copeptin and NT-proBNP, from a group with low plasma concentrations of both markers (group 1, with 63.7 percent survival) to a group with a combination of high plasma concentrations of both markers (group 4, with 16.5 percent survival). Prognostic information obtained by the markers was greater when both were combined.

"The objective of this study was to apply markers in a patient group

commonly encountered in primary care, i.e., elderly patients who often present with other diseases, making interpretation of symptoms difficult. The original design of our cohort study did not allow us to assess diagnostic elements of biomarker measurement. Instead, we focused solely on the prognostic information of the markers when applied in a primary care population. These data, together with our findings of the prognostic information provided by measurement of copeptin concentrations in elderly patients with symptoms of heart failure, suggest that vasopressin may be a potential target for therapeutic intervention."

More information: JAMA. 2011;305[20]2088-2095.

Provided by JAMA and Archives Journals

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