Diastolic dysfunction of the heart associated with increased risk of death

June 27 2011

Individuals with diastolic dysfunction (an abnormality involving impaired relaxation of the heart's ventricle [pumping chamber] after a contraction) appear to have an increased risk of death, regardless of whether their systolic function (contraction of the heart) is normal or they have other cardiovascular impairments, according to a report in the June 27 issue of *Archives of Internal Medicine*.

During each heartbeat, the heart contracts (pumping blood out, a phase called systole) and then relaxes (allowing the heart chambers to refill with blood, a phase called diastole). Diastolic dysfunction (DD), which occurs when the relaxation phase of this cardiac cycle is impaired, has been associated with an increased risk of death from cardiovascular and other causes, sometimes when systolic function is normal, according to background information in the article. The authors sought to determine whether the mortality risk associated with DD was independent of other cardiovascular conditions or systolic function, and whether the risk existed for mild cases. "We therefore sought to address the clinical relevance of the presence of DD and the degree of DD in patients with normal ejection fraction undergoing outpatient echocardiography, one of the most commonly used cardiac noninvasive imaging tests in the United States," they write.

Carmel M. Halley, M.D., and colleagues from the Cleveland Clinic studied the clinical records and echocardiographic findings of 36,261 patients who, between 1996 and 2005, had an outpatient echocardiogram that revealed normal systolic function. Researchers then determined

whether patients' diastolic function was normal or abnormal, and graded cases of DD as mild, moderate, or severe.

Rates of established cardiovascular disease were low in the study population, including congestive heart failure (3.5 percent), coronary artery disease (0.6 percent) and peripheral vascular disease (1.1 percent). Most of the patients (65.2 percent) had some degree of DD; 60.0 percent of cases were mild, 4.8 percent were moderate, and 0.4 percent were severe. During an average followup time of 6.2 years, 5,789 deaths occurred, and the unadjusted mortality rate was higher in patients with worsening degrees of DD (4,469 deaths [21 percent] in the mild DD group, 429 deaths [24 percent] in the moderate DD group and 49 deaths [39 percent] in the severe DD group). However, in statistical analysis using propensity matching techniques, only moderate and severe DD were associated with an increased mortality risk.

"Because the overall prevalence of DD was high, most patients who presented for outpatient echocardiographic testing in our institution had, by definition, preclinical DD," the authors note. In this regard, the study "provides the physician with a prognostic context when DD is reported," particularly because in most cases, noncardiologists are ordering the echocardiographic procedures. The researchers call for further investigation about how moderate and severe DD raise the risk of mortality. "However," they add, "our results suggest that an increased awareness of the clinical significance of advanced DD may lead to earlier identification of those patients who are at risk, especially at a preclinical stage."

More information: *Arch Intern Med*. 2011;171[12]:1082-1087.

Provided by JAMA and Archives Journals