

# Featured research

## Abstracts and commentaries

### The cardiovascular risk factor, left ventricular hypertrophy, is highly prevalent in stable, treated angina pectoris

Ang DSC, Pringle SD, Struthers AD. *Am J Hypertens*. 2007;20:1029–1035.

Recent evidence suggests that left ventricular hypertrophy (LVH) is an important cause of cardiac death in patients with coronary artery disease (CAD). Not only is LVH common in patients with CAD, it also confers an added independent risk of cardiac death. Furthermore, a recent analysis suggests that identifying and regressing LVH in patients with angina should be worthwhile and cost effective. Despite this, the role of LVH in CAD is underappreciated and little studied. In fact, the only previous prevalence study was carried out in Chicago in 1992, where 70–80% of the patients with CAD were black and had hypertension [1]. Clearly, the treatments for both CAD and hypertension are considerably different 15 years later, which means that currently we lack up-to-date information on the prevalence of LVH in CAD. Therefore, this study assessed the current prevalence of LVH in stable, treated patients with CAD. The investigators deliberately chose stable, treated patients, as they were mainly interested in the prevalence of LVH that remained after the CAD had been optimally treated, to determine whether LVH was a possible residual therapeutic target.

### Commentary

Three hundred and twenty-two consecutive patients with angiographically confirmed coronary artery disease were recruited. It is worth noting that the majority of patients had been stable on their antianginal treatments for a prolonged period of time. Echocardiographic left ventricular mass was measured and correlated with both office and 24 h ambulatory blood pressure. The inclusion criteria were a history of ischemic chest pain and the presence of angiographically proven CAD (more than 50% reduction in the

cross-sectional diameter of a major coronary artery). The majority of the patients had been treated with stable antianginal medication for approximately 1 year and the majority had no current symptoms of angina pectoris. Of the 267 patients in whom left ventricular mass measurements were obtained, 195 (73%) had LVH. The mean 24 h ambulatory blood pressure reading was systolic  $125 \pm 12$  mmHg and diastolic  $68 \pm 8$  mmHg in the group with LVH. Of the LVH patients, 62% had a non hypertensive 24 h blood pressure reading. On multivariate logistic regression analysis, factors independently related to LVH were history of hypertension (odds ratio [OR] 1.848, 95% confidence interval [CI] 1.051 to 3.248), body mass index (OR 1.085, 95% CI 1.011 to 1.165), and age (OR 1.039, 95% CI 1.004 to 1.076). The predominant left ventricular geometry pattern in this study population was concentric LVH (39% when indexed to body surface area). The results of this study suggest a high prevalence of echo LVH in patients with stable, treated CAD. The other main finding of practical clinical relevance is that LVH is common even in the presence of a normal office or 24 h ambulatory blood pressure (68%, 113/165 mmHg; 75%, 78/104 mmHg, respectively) in patients with stable, treated angina. In summary, this is the first study to demonstrate that the prevalence of LVH in stable, optimally treated patients with angina is high. Future studies should now examine whether detecting and fully regressing LVH in normotensive, stable patients with CAD and with LVH would improve the prognosis in patients with CAD.

### REFERENCE

1. Ghali JK, Liao Y, Simmons B, Castaner A, Cao G, Cooper RS. The prognostic role of left ventricular hypertrophy in patients with or without coronary artery disease. *Ann Intern Med*. 1992;117:831–836.

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### Gender differences in the management and clinical outcome of stable angina

Daly C, Clemens F, Lopez Sendon JL et al, for the Euro Heart Survey Investigators. *Circulation*. 2006;113:490–498.

The Euro Heart Survey of Stable Angina examined the impact of gender on the investigation and subsequent management of stable angina and assessed gender differences in clinical outcome at 1 year. A total of 3779 patients (42% women) with a clinical diagnosis of stable angina on initial assessment by a cardiologist were enrolled in the survey. Baseline clinical details and cardiac investigations planned or performed within a 4-week period of the assessment were recorded, and follow-up data were collected at 1 year. Women were less likely to undergo an exercise ECG (odds ratio 0.81; 95% confidence interval [CI] 0.69 to 0.95), and less likely to be referred for coronary angiography (odds ratio 0.59; 95% CI 0.48 to 0.72). Antiplatelet and statin therapies were used significantly less in women than in men, both at initial assessment and at 1 year, even in those in whom coronary disease had been confirmed. Women with confirmed coronary disease were less likely to undergo revascularization than were their male counterparts, and were twice as likely to suffer death or non fatal myocardial infarction during the 1-year follow-up period (hazard ratio 2.09; 95% CI 1.13 to 3.85), even after multivariable adjustment for age, abnormal ventricular function, severity of coronary disease, and diabetes. It was concluded that significant gender bias exists in the use of investigations and evidence-based medical therapy in stable angina. Women were also less likely to undergo revascularization. The observed bias is of particular concern in light of the adverse prognosis observed among women with stable angina and confirmed coronary disease.

### Commentary

This large survey of patients with stable angina pectoris revealed a substantial undertreatment of the female patients compared with the male patients, at least according to European standards. This conclusion is based on fewer referrals for invasive and non invasive

investigations, fewer revascularization procedures, and fewer female patients receiving “optimal” medical treatment. According to the investigators, this trend is all the more worrying in view of the worse prognosis for angina in women who have confirmed coronary disease.

Several factors must be taken into account when evaluating the clinical relevance of these conclusions.

- The Euro Heart Survey program includes a small number of patients, on a voluntary basis, and they may not be representative of the entire population. Moreover, major differences in the practice of medicine among European countries may affect the overall results, depending on the geographical origin of the patients who are included.
- Angina in women with coronary artery disease certainly has a worse prognosis than that in men. The Survey investigators seem to imply that a more liberal access to investigations and procedures could modify this situation. However, this suggestion does not appear to be supported by scientific evidence; if anything, we know that revascularization procedures in stable angina have a very limited impact on prognosis. No trial comparing percutaneous coronary intervention with medical treatment has been able to demonstrate a significant reduction in the rates of death, myocardial infarction, or both, in patients with stable angina. Given the fact that such percutaneous coronary intervention is less effective and more complicated in women than in men, it appears difficult to imagine that a wider use of revascularization procedures could improve prognosis among women.
- The relationship between angina and age in women is more complex than in men. Angina in younger women is often associated with absence of obstructive coronary lesions whereas, in older women, coronary atherosclerosis is more severe and diffuse than in men. Among men, the relationship between age and coronary atherosclerosis is more uniform and progressive. The fact that men and women studied in the Euro Heart Survey had a similar mean age, does not, therefore, provide sufficient information as to the likelihood of significant coronary atherosclerosis.

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