

## Prognostic Importance of Stable Angina in Women and Men

Hemingway H, McCallum A, Shipley M, et al. Incidence and prognostic implications of stable angina pectoris among women and men. *JAMA* 2006;295:1404–11.

### Study Overview

**Objective.** To determine gender differences in incidence and prognosis of stable angina in a large population of outpatients.

**Design.** Prospective cohort study using national registry data.

**Setting and participants.** Ambulatory patients aged 45 to 89 years without prior coronary heart disease (CHD) who received health care in Finland reimbursed through the Social Insurance Institution (national health care available to all citizens). Individuals were classified as having “nitrate angina” if they had reimbursement for prescription nitrates and as “test-positive angina” if they had reimbursement for chronic angina, which in Finland requires medical certification that the patient has chronic angina pectoris symptoms responding to medication and unequivocal electrocardiographic ischemic changes or coronary artery disease confirmed on angiography. Severity of angina was based on amount of nitrates used. The cohort was based on patients receiving care between 1996 and 1998, and follow-up was through 2001.

**Main outcome measures.** Age-standardized CHD mortality at 4 years and all-cause mortality, fatal CHD, and nonfatal myocardial infarction at 1 year compared with rates in the overall Finnish population.

**Main results.** The age-standardized annual incidence of angina per 100 population was 2.03 for men and 1.89 for women. Nitrate angina was more common in women, and test-positive angina was more common in men. Nitrate angina similarly increased the risk of CHD mortality for women and men (eg, for those aged 55–64 years, nitrate angina increased the CHD mortality rate 2.65-fold for women and 2.25-fold for men over the baseline population risk). Test-positive angina increased the standardized mortality ratios for fatal CHD more for women than for men. There was a graded relationship between the amount of nitrates used and increased risk of CHD death. Among test-positive angina patients with diabetes, the age-standardized CHD event rate was 9.9 per 100 person-years for women

compared with 9.3 per 100 person-years for men.

**Conclusion.** The incidence of angina was similar in women and men. Compared with women in the general population, stable angina was associated with higher CHD mortality, and the relative magnitude of this increased risk was at least as great for women as it was for men. Women and men with test-positive angina and diabetes had similar absolute CHD event rates.

### Commentary

Hemingway et al’s findings add to our knowledge of the prognostic significance of angina pectoris. Both symptom-treated angina and test-confirmed angina carry a negative prognosis for both women and men, particularly among young and middle-aged adults. While the relationship to CHD mortality was not as great for nitrate angina as for test-positive angina, nitrate angina alone significantly increased standardized CHD mortality ratios in both sexes across all age-groups. This study should provide further encouragement to physicians to employ effective secondary prevention strategies for CHD in both men and women with stable angina symptoms and also help to banish the misconception that isolated angina in women is a benign condition.

There are, however, some limitations to this population-based registry approach. Multiple studies have shown that women and men receive different care when they present with CHD-related symptoms [1]. Differences in how physicians select men and women for treatment with nitrates or referral for diagnostic testing would clearly have an impact on these findings. The authors do point out that the poorer relative prognosis for test-positive angina observed in women could be due to a tendency for physicians to test only women with more obvious or severe symptoms. It is possible that a similar bias could be true for receipt of nitrate therapy. If so, the incidence of angina among women could exceed that of men.

### Applications for Clinical Practice

Stable angina is associated with an increased risk of fatal CHD or nonfatal myocardial infarction in both women and men and should not be considered a benign condition.

Women and men with stable angina should be considered for all appropriate secondary prevention strategies.

—*Review by Stephen D. Persell, MD, MPH*

**Reference**

1. Sheifer SE, Escarce JJ, Schulman KA. Race and sex differences in the management of coronary artery disease. *Am Heart J* 2000;139:848–57.

Copyright 2006 by Turner White Communications Inc., Wayne, PA. All rights reserved.