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Endogenous sex hormones and cardiovascular disease incidence in men.

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Abstract

BACKGROUND: Data suggest that endogenous sex hormones (testosterone, dehydroepiandrosterone sulfate [DHEA-S], and estradiol) influence cardiovascular disease (CVD) risk factors and vascular function. Yet, prospective studies relating sex hormones to CVD incidence in men have yielded inconsistent results.

OBJECTIVE: To examine the association of circulating sex hormone levels and CVD risk in men.

DESIGN: Prospective cohort study.

SETTING: Community-based study in Framingham, Massachusetts.

PARTICIPANTS: 2084 middle-aged white men without CVD at baseline.

MEASUREMENTS: The authors used multivariable Cox regression to relate baseline levels of testosterone, DHEA-S, and estradiol to the incidence of CVD (coronary, cerebrovascular, or peripheral vascular disease or heart failure) during 10 years of follow-up.

RESULTS: During follow-up, 386 men (18.5%) experienced a first CVD event. After adjustment for baseline standard CVD risk factors, higher estradiol level was associated with lower risk for CVD (hazard ratio per SD increment in log estradiol, 0.90 [95% CI, 0.82 to 0.99]; P = 0.035). The authors observed effect

modification by age: Higher estradiol levels were associated with lower CVD risk in older (median age >56 years) men (hazard ratio per SD increment, 0.86 [CI, 0.78 to 0.96]; P = 0.005) but not in younger (median age < or =56 years) men (hazard ratio per SD increment, 1.11 [CI, 0.89 to 1.38]; P = 0.36). The association of higher estradiol level with lower CVD incidence remained robust in time-dependent Cox models (updating standard CVD risk factors during follow-up). Serum testosterone and DHEA-S levels were not statistically significantly associated with incident CVD.

LIMITATIONS: Sex hormone levels were measured only at baseline, and the findings may not be generalizable to women and nonwhite people.

CONCLUSIONS: In the community-based sample, a higher serum estradiol level was associated with lower risk for CVD events in older men. The findings are consistent with the hypothesis that endogenous estrogen has vasculoprotective influences in men.

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Publication types, MeSH terms, Substances, Grant support

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