

Abstract

N Engl J Med. 2007 Jun 21;356(25):2591-602

Estrogen therapy and coronary-artery calcification.

Manson JE, Allison MA, Rossouw JE, Carr JJ, Langer RD, Hsia J, Kuller LH, Cochrane BB, Hunt JR, Ludlam SE, Pettinger MB, Gass M, Margolis KL, Nathan L, Ockene JK, Prentice RL, Robbins J, Stefanick ML; WHI and WHI-CACS Investigators.

Brigham and Women's Hospital, Harvard Medical School, Boston, MA 02215, USA.

BACKGROUND: Calcified plaque in the coronary arteries is a marker for atheromatous-plaque burden and is predictive of future risk of cardiovascular events. We examined the relationship between estrogen therapy and coronary-artery calcium in the context of a randomized clinical trial.

METHODS: In our ancillary substudy of the Women's Health Initiative trial of conjugated equine estrogens (0.625 mg per day) as compared with placebo in women who had undergone hysterectomy, we performed computed tomography of the heart in 1064 women aged 50 to 59 years at randomization. Imaging was conducted at 28 of 40 centers after a mean of 7.4 years of treatment and 1.3 years after the trial was completed (8.7 years after randomization). Coronary-artery calcium (or Agatston) scores were measured at a central reading center without knowledge of randomization status.

RESULTS: The mean coronary-artery calcium score after trial completion was lower among women receiving estrogen (83.1) than among those receiving placebo (123.1) ($P=0.02$ by rank test). After adjustment for coronary risk factors, the multivariate odds ratios for coronary-artery calcium scores of more than 0, 10 or more, and 100 or more in the group receiving estrogen as compared with placebo were 0.78 (95% confidence interval, 0.58 to 1.04), 0.74 (0.55 to 0.99), and 0.69 (0.48 to 0.98), respectively. The corresponding odds ratios among women with at least 80% adherence to the study estrogen or placebo were 0.64 ($P=0.01$), 0.55 ($P<0.001$), and 0.46 ($P=0.001$). For coronary-artery calcium scores of more than 300 (vs. <10), the multivariate odds ratio was 0.58 ($P=0.03$) in an intention-to-treat analysis and 0.39 ($P=0.004$) among women with at least 80% adherence.

CONCLUSIONS: Among women 50 to 59 years old at enrollment, the calcified-plaque burden in the coronary arteries after trial completion was lower in women assigned to estrogen than in those assigned to placebo. However, estrogen has complex biologic effects and may influence the risk of cardiovascular events and other outcomes through multiple pathways. (ClinicalTrials.gov number, NCT00000611.) Copyright 2007 Massachusetts Medical Society

PMID: 17582069