



Kronos Early Estrogen Prevention Study

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RELATIONSHIP OF CORONARY CALCIFICATION TO CONVENTIONAL AND METABOLIC RISK FACTORS IN RECENTLY MENOPAUSAL WOMEN.

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Objective: The lower rate of coronary heart disease (CHD) events in women vs. men reverses after menopause, but the extent to which conventional risk factors predict clinically silent CHD in perimenopausal women is unknown. Coronary artery calcification (CAC) by CT or EBT correlates with coronary atherosclerosis burden and is a strong predictor of CHD events. We compared historical and biochemical predictors of CHD with CAC in recently (<36 months) menopausal 42-58 year old women screened for the Kronos Early Estrogen Prevention Study (KEEPS) an ongoing study of vascular effects of oral vs. transdermal estrogen.

Design and Method: We measured CAC and CHD risk markers in 691 KEEPS candidates without clinical CHD. In women with low (<1, n=603); intermediate (1-49, n=63); and high (50+, n=25) CAC Agatston scores, we compared Framingham Risk Scores (FRS), a weighted index of several components (age systolic BP, total and HDL cholesterol, hypertension, and smoking status); each FRS component; and additional non-FRS risk markers including LDL cholesterol, BMI, components of the "metabolic syndrome" (MS) (diastolic blood pressure, triglycerides, waist circumference, and fasting blood glucose); and the MS itself (2001 NCEP ATP-III criteria) across CAC groups by the Tukey-Kramer HSD test for continuous variables and ChiSquare likelihood ratios for classification variables.

Results: FRS were significantly, but only modestly, greater in women with high vs. low Agatston scores (12.2 ± 2.6 vs. 10.4 ± 2.8 , $p < 0.01$); of 25 high CAC women, 19 (76%) had FRS above the 95% confidence upper bound for women with low CAC.



KEEPS

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Among FRS components, only smoking status differed significantly (smokers = 5.8%, 11.1%, and 24.0% of low, intermediate and high CAC groups respectively; $p = 0.007$). None of the non-FRS risk factors differed significantly among the CAC groups and respectively 7.6%, 9.5% and 4.0% were positive for the MS ($p = 0.65$).

Conclusion: Tempered by the *caveat* that relatively few women studied had high Agatston scores, in recently menopausal women the composite FRS discriminated silent CHD fairly well. However, except for a history of smoking, none of the individual FRS components, presence of the MS, nor any of the MS components was a strong predictor of subclinical CHD. We conclude that: (1) efforts to reduce smoking in young women should be intensified and; (2) new markers and/or etiologic factors should be sought to further improve identification and prevention in pre- and early postmenopausal women most in need of CHD preventive measures.