uals who continue to accumulate coronary calcium over time. Sequential EBT imaging may prove very useful in identifying patients at risk of events owing to progressive expansion of coronary calcification burden.

12:12 p.m.

1190MP-164   Family History of Premature Coronary Heart Disease Is Associated With Higher Coronary Artery Calcium Burden in Asymptomatic Individuals

Khurram Nasir, John A. Rumberger, Joel B. Braunstein, Wendy S. Post, Matthew J. Budoff, Roger S. Blumenthal, Johns Hopkins University, Baltimore, MD, Ohio Heart, Columbus, OH

BACKGROUND: Hereditary factors strongly influence the risk of coronary heart disease (CHD), but their contribution to coronary atherosclerosis beyond that measured by traditional CHD risk factors is uncertain. Electron-beam computed tomography (EBCT)–derived coronary artery calcium (CAC) scores are closely correlated with future CHD events. The objective of this study was to evaluate the influence of family history (FH) of premature CHD (<55 years) on CAC scores in asymptomatic individuals.
METHODS AND RESULTS: We performed a cross-sectional analysis of 7370 asymptomatic individuals referred for EBCT. Age and gender stratified distributions of median, 75th and 90th percentile CAC scores were higher in individuals with a premature FH compared to those without it. Multivariate regression demonstrated that FH of premature CHD was independently associated with presence of any CAC (OR≈1.50, 95% CI=1.33-1.68) as well as severe coronary calcification (CC) defined by a CAC score > 400 (1.64, 1.36-1.98). The risk of having severe CC associated with a premature FH of CHD was similar to that of smoking (1.78, 1.36-2.33), hypertension (1.99, 1.68-2.38) and diabetes (1.66, 1.28-2.15), however it was less than male gender (4.95, 3.97-6.65), and increasing age (3.43, 3.12-3.85). Dyslipidemia was not associated with presence of severe CC.
COMMENT: Asymptomatic individuals with a FH of premature CHD have a higher CAC burden than individuals without it, and should be targeted for aggressive primary prevention.

CAC distribution according to family history of premature CHD

	Median	Median	75th percentile	75th percentile	90th percentile	90th percentile
Males (4839)						
<45 years	0	0	9	1	87	22
45-54 years	16	4	112	52	438	207
55-64 years	123	55	506	250	931	714
>64 years	262	257	991	695	1919	1501
Females (2531)						
<45 years	0	0	0	0	4	1
45-54 years	0	0	3	0	4	1
55-64 years	0	0	49	37	200	174
>64 years	136	23	397	202	859	609

12:24 p.m.

1190MP-165   Moderate Coronary Calcification Is Common in Women With a Family History of Premature Coronary Disease but a Low Global Risk Score

Roger S. Blumenthal, Hui-San Chung, Lisa R. Yanek, Taryn F. Moy, Khurram Nasir, Lewis C. Becker, Diane M. Becker, Johns Hopkins University School of Medicine, Baltimore, MD

Background: Global risk assessment based on the Framingham Risk Equation (FRE) may underestimate true CHD risk in women with a family history (FH) of premature CHD, since FH is not included in the FRE. To determine the extent to which an increased burden of coronary atherosclerosis is seen in apparently healthy sisters of probands with premature CHD, we examined the prevalence of moderately elevated coronary artery calcium (CAC) scores (> 100) across FRE scores for total CHD events.
Methods: We obtained CAC scores from ultrafast computed tomography and 10-year FRE scores for any CHD event from traditional risk factor measurements in 62 healthy sisters (age 54±6 yrs, 21% African American) of probands with CHD < 60 yrs of age.
Results: All FRE scores ranged from low to intermediate risk (0-19%, median 6%), and CAC scores ranged from 0 to 1955. The prevalence of moderately elevated CAC scores increased with higher FRE scores (p=0.004) (Table). Women above the median FRE score had an 8-fold increased prevalence of moderately elevated CAC (95% CI 1.4-59). When using the FRE for hard events, 7/15 (47%) of the women with a 10-year event risk ≥ 3% (range of 3-9%) had at least moderate CAC.
Conclusion: While the FRE classified women in our sample as low risk for a CHD event, we found increased burdens of coronary atherosclerosis in middle-aged women with a FH of premature CHD and a FRE risk > 5% for any CHD event or even just ≥ 3% for a 10-year hard event risk. These data suggest that the FRE underestimates risk in women with a FH of premature CHD.

Relation of Framingham risk score and prevalence of moderate coronary calcification

	FRE<5% (n=24)	FRE 5-10% (n=23)	FRE>10% (n=15)
Prevalence of CAC >100	0%	30%	40%

12:36 p.m.

1190MP-166   The Impact of Body Mass Index and Familial History of Diabetes on the Presence of Subclinical Coronary Atherosclerosis

Joel B. Braunstein, John A. Rumberger, Wendy S. Post, Khurram Nasir, Roger S. Blumenthal, The Johns Hopkins Medical Institutions, Baltimore, MD, Ohio Heart, Columbus, OH

Background: While emerging evidence suggests that the metabolic syndrome accelerates atherosclerosis, few studies have evaluated whether two important risk factors for this syndrome, obesity and family history (FH) of type 2 diabetes, independently influence the development of subclinical coronary atherosclerosis in an asymptomatic, young population.
Methods: We studied 6,213 consecutive asymptomatic, non-diabetic individuals (53±9.8 yrs; 65% male) who presented for electron-beam computed tomography (EBCT) between 1999 and 2002. We obtained from patients their body-mass index (BMI) based on current height and weight, traditional risk factor profiles, and FH of diabetes. We used multiple logistic regression to determine the independent influence of categorical BMI levels (<20 kg/m2, 20-24.9 kg/m2, 25-29.9 kg/m2, 30-34.9 kg/m2, >35 kg/m2) and FH on coronary artery calcification (CAC) presence, a surrogate marker of coronary atherosclerosis.
Results: In bivariate analysis, every categorical increase in BMI associated with a 40% increased odds (95% CI 1.32-1.48, p<0.001) of CAC. Sibling history of diabetes (n=411) and parental history of diabetes (n=1,265) were, respectively, associated with a 1.38 OR (1.12-1.69, p<0.001) and 0.91 OR (0.81-1.03, p=0.15) for CAC. Increasing BMI levels (OR 1.39, 1.30-1.48, p<0.001) and sibling history of diabetes (OR 1.31, 1.03-1.67, p=0.03) remained important predictors for the presence of CAC after adjusting for age, gender, hypertension, lipids, current smoking, and premature FH of coronary heart disease. Parental history of diabetes had no impact on CAC risk (OR 1.01, 0.87-1.16), and no significant interactions existed between BMI levels and FH of diabetes.
Conclusion: Among non-diabetic individuals, increased levels of BMI and a sibling history of diabetes are independent predictors for the presence of subclinical coronary atherosclerosis. Patients with these characteristics may derive cardiovascular benefit from intensified primary prevention efforts, particularly those involving lifestyle modification.

12:48 p.m.

1190MP-167   The Metabolic Syndrome, Diabetes, and Subclinical Atherosclerosis Assessed by Coronary Calcium

Nathan D. Wong, Maria Sciammarella, Donna Polk, Amy Gallagher, Romalisa Miranda-Peats, Brian Whitcomb, Rory Hachamovich, John Friedman, Sean Hayes, Daniel S. Berman, University of California, Irvine, Irvine, CA, Cedars-Sinai Medical Center, Los Angeles, CA

Background: Persons with the metabolic syndrome (MetS) are at increased risk for coronary heart disease (CHD) events. We compared the prevalence and extent of coronary artery calcium (CAC) among persons with MetS, diabetes, and neither condition. Methods: Of 1822 persons (36% female) aged 20-79 years who had screening for CAC by electron beam computed tomography, 278 were defined to have MetS using National Cholesterol Education Program criteria, 150 had diabetes, and the remainder (n=1394) had neither condition. The prevalence of CAC among these groups was compared, and the estimated 10-year Framingham risk of CHD was compared by number of MetS risk factors and presence of calcium.
Results: Among persons with no disease, MetS, and diabetes, the prevalence of CAC among males was 53.5%, 58.8%, and 75.3% (p<.001 across groups), respectively, and among females was 37.6%, 50.8%, and 52.7% (p<.001 across groups), respectively. CAC prevalence increased by number (0-5) of MetS risk factors (from 34.4% to 63.6%), as did Framingham 10-year risk of CHD (from 5.7% to 13.7%, respectively) (p<0.001). 48% of MetS subjects had either a 20% or greater risk of CHD or CAC at or above the 75th percentile for age and gender. Compared to those with no disease, risk factor-adjusted odds of CAC was 1.41 (95% CI=1.05-1.89) among those with MetS and 1.72 (1.15-2.57) among those with diabetes. Conclusion: Those with MetS or diabetes have an increased prevalence of CAC. Half of persons with MetS have significant CAC or greater than a 20% 10-year risk for CHD, potentially warranting more aggressive treatment of risk factors in these individuals.

1:00 p.m.

1190MP-168   Reproducibility of Coronary Calcium Measurements From Multidetector Computed Tomography

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Coronary calcium scanning is widely used for the noninvasive evaluation of atherosclerosis. We examined the inter-scan reproducibility of total coronary calcium (CC) scores (TCS) and volume scores (VS), and the factors affecting reproducibility in 537 persons