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ATHEROSCLEROSIS

SUPPLEMENTS

OFFICIAL JOURNAL OF THE EUROPEAN
ATHEROSCLEROSIS SOCIETY

AFFILIATED WITH THE INTERNATIONAL
ATHEROSCLEROSIS SOCIETY
AND
THE SOCIETY OF ATHEROSCLEROSIS IMAGING AND PREVENTION

ABSTRACTS
XIV International Symposium on Atherosclerosis
Rome, Italy, June 18-22, 2006

P9   DIAGNOSTIC TECHNOLOGIES FOR CARDIOVASCULAR DISEASES

Tu-P9:332   APOLIPOPROTEINS:CORRELATION WITH CAROTID INTIMA-MEDIA THICKNESS AND CORONARY ARTERY DISEASE

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Lower levels of plasma apolipoprotein A-I (Apo-A-I) and higher levels of ApoB, and the ratio of ApoB to ApoA-I are considered to be independent risk factors for coronary heart disease.Carotid intima-media thickness (CIMT) is considered as a marker of atherosclerosis and in prediction of clinical coronary events. Aim of this study is to correlate the apoLP levels with coronary artery disease (CAD) and their impact on arterial thickening utilizing the CIMTas a surrogate marker.

Methods: Traditional lipid profile.apo A-I and B and CIMT with a B-mode scan were measured in 119 patients recruited for the study (age group 38-64years), which included 63 male and 56 females. Mean of maximal CIMT exceeding 0.8 mm at the far wall of the common carotid artery, excluding plaques, was selected as the higher values for comparison. Seventy-six subjects had evidence for CAD as diagnosis by documented hospitalization/myocardial infarction, acute coronary syndrom, coronary angiography when feasible. Prevalence of subjects with increased IMT was higher among subjects with ApoB/ApoA-I ratio exceeding one compare to those with a ratio less than one (30.6% vs 16.5%, p=0.005). Prevalence of CAD was significant high er among subjects with ApoB/ApoA-I ratio exceeding one as compared to those with a ratio less than one (53.7% vs 30.3%, p=0.0002). Subjects with apoB: apoA-I ratio exceeding one and CIMT more than 0.8 mm had 2.7-fold prevalence for CAD as against those with a ratio less than one and IMT less than 0.8 mm. We conclude that Apo-B to Apo-A ratio shows a strong association with CIMT and CAD and may play iportant role in addition to traditional risk factors.

Tu-P9:333   FAMILIAL AGGREGATION OF CAROTID ARTERY INTIMA MEDIA THICKNESS: A THREE-GENERATION STUDY

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Objective: to investigate whether familial aggregation of carotid IMT is influenced by the subjects' age.

Methods: Twenty-four grandchildren (14 men and 10 women), one of their parents (13 men and 11 women) and one of their grandparents (6 men and 18 women), were recruited. Each of them had their CC-IMTmean, Bif-IMTmean, ICA-IMTmean and Mean-IMT measured by B-Mode ultrasound. Simple linear regression analysis by the least squares method was used to investigate correlations between carotid IMT in the young generational pairs (grandchildren vs parents) as well as in the old generational pairs (parents vs grandparents). For each generational pairs, the squared correlation coefficient (r2) was used to evaluate the extent of offspring's carotid IMT variability explained by the carotid IMT of their respective parents.

Results: The mean age (±SD) of grandparents, parents and grandchildren was 77.3±6.8, 51.5±7.4 and 23.5±7.0, respectively. The corresponding figures for Mean-IMT was 1.45±0.25 mm, 0.94±0.22 mm and 0.63±0.10 mm, respectively. Mean carotid IMT variables of progenitors' correlated with carotid IMT of their offspring in the young generational pairs (r2 =0.24, p<0.015 for Mean-IMT; r2 =0.33, p=0.003 for Bif-IMTmean) but not in the old generational pairs.

Conclusions: Familial aggregation of carotid IMT is better appreciable in the young generational pairs. This may be due to the higher prevalence of potential confounding environmental factors in the older generational pairs.
Funding: Research supported in part by Italian Ministry of Health.

Tu-P9:334   CAROTID ARTERY INTIMA-MEDIA THICKNESS IN 65-100 YEARS OLD

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Objective: The aim of this study is to investigate relationship between carotid artery intima-media thickness (IMT) and risk factors with age up to 65 years old.

Methods: We studied 791 outpatients, aged 30 to 100 years. Subjects were divided into five groups by age;30-54 yr (group A; n=73, 48.3yr), 55-64 yr (group B; n=164, 60.2yr), 65-74 yr (group C; n=284, 69.8yr), 75-84 yr (group D; n=214, 78.8yr), and 85-100 yr (group E; n=56, 87.8yr). Multiple regression analysis was used to IMT (dependent variable) and independent variables (age, sex, patient with diabetes, total cholesterol, systolic blood pressure, administration of statin).

Results: The systolic blood pressure was significantly increased and the diastolic blood pressure, serum cholesterol, and triglyceride were significantly decreased with age. There was a significant correlation between systolic and diastolic blood pressure. A significant correlation was found between serum total cholesterol and triglyceride. The mean IMT increased in a liner manner with age (r=0.27; p<0.001). On multiple regression analysis, age, sex, cholesterol, diabetes, and systolic blood pressure were significant predictors of IMT in 30-100yr of age group. In group A, B, and E, sex and total cholesterol were significant predictors of IMT. However, in group C, sex and systolic blood pressure were significant predictors of IMT. In group D, there was no significant predictor of IMT.

Conclusions: The present study indicated that IMT was not a single entity in the elderly. Especially in 65-84yr of age, different factors were affected to IMT compared to other aged group.

Tu-P9:335   THE EFFECT OF AGE AND OTHER ATHEROSCLEROTIC RISK FACTORS ON CAROTID ARTERY BLOOD VELOCITY IN SUBJECTS RANGING FROM YOUNG ADULTS TO CENTENARIANS

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Objectives and Methods: To evaluate the effect of age and other risk factors for atherosclerosis on arterial blood velocity, carotid arteries in 179 healthy subjects ranging from 21 to 102 years old were examined by color Doppler ultrasonography.

Results: Velocity in common carotid arteries (CCA) decreased significantly with age (Peak Velocity <m/sec> = -0.006*Age + 1.302; Minimum Velocity = -0.003*Age + 0.461). In internal carotid arteries (ICA), minimum velocity also decreased significantly with age <-0.002*Age + 0.348>. In CCA, mean IMT at non-plaque sites correlated inversely with velocity. Although age was the only factor associated with decreased peak velocity in CCA in adults <65 years old (p=0.0106), peak CCA velocity in the elderly (65 yeas old) was inversely associated with age (p=0.0002) and diastolic blood pressure (DBP) (p=0.0025), and directly associated with pulse pressure (p= 0.0087). In the elderly, minimum velocity of CCA was inversely correlated with age (p= 0.0001) and DBP (p= 0.0021). In ICA, peak velocity correlated inversely with age (p= 0.0325) in adults; however, in the elderly group, peak velocity correlated only with serum HDL-C (p= 0.0369). Minimum ICA velocity correlated inversely with age in all age groups; it was also inversely correlated with systolic blood pressure in adults (p= 0.0179) and DBP in elderly subjects (p= 0.0689).

Conclusions: Blood velocities in carotid arteries decreased continuously with age. In elderly, increased pulse pressure possibly has a protective role for blood flow maintenance against slowing blood flow by aging; however, its effect should be limited.

Tu-P9:336   SMOKING HABITS AS DETERMINANT OF CAROTID IMT IN PATIENTS IN PRIMARY AND SECONDARY PREVENTION

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Objective: To compare the contribution of smoking habit as determinant of carotid artery intima media thickness (IMT) in patients symptomatic for vascular disease and asymptomatic controls.

Methods: Patients in secondary prevention (SP) were matched for gender and smoking habit with patients classified in primary prevention (PP) because free of vascular events even if ten years older (n=180 per group). In both groups there were 87 never-, 68 former- and 25 current-smokers.

Results: Years of smoking, cigarettes/day (cig/die) and pack-years corre-

lated with IMT better in SP than in PP patients. In former smokers, a stronger negative correlation with years elapsed since smoking cessation was observed in SP than in PP patients. Although selected to be 10 years older, patients in PP showed a lower IMT than those in SP (0.93 ± 0.33 vs 1.06 ± 0.34; p=0.009). Similar results were obtained after patients stratification in never-, former and current-smokers. A general linear model confirms, after data adjustment for age, cig/die and conventional vascular risk factors, that both prevention level (p=0.012) and smoking habits (p=0.017) were independently associated with carotid IMT. No additive effect between prevention level and smoking habits was observed.

Conclusions: Prevention level is associated with a thickened carotid intima media complex independently of variables descriptive of smoking behaviour and other conventional risk factors. Smoking habit is an important determinant of carotid IMT both in primary and secondary prevention patients.

Tu-P9:337   RELATIONSHIP BETWEEN CARDIOVASCULAR GLOBAL RISK IN PRIMARY AND SECONDARY PREVENTION AND CAROTID ATHEROSCLEROSIS

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Objective: To investigate whether the Framingham Risk Score (FRS) and the GISSI Risk Score (GRS), two algorithms useful to calculate the individual global risk in primary and secondary prevention, are associated with carotid artery intima media thickness (IMT) and IMT-progression, two parameters widely accepted as indexes of carotid and even coronary atherosclerosis.

Methods: 1205 asymptomatic and 262 symptomatic patients have been recruited to investigate the association between FRS, GRS and cross-sectional IMT. 404 patients with at least 5 years of follow-up (312 in primary and 92 in secondary prevention) were recruited to investigate the association between FRS, GRS and IMT-progression.

Results: While cross-sectional IMT significantly increases with the raising of quartiles of global risk of patients both in primary and secondary prevention (both p< 0.0001; 4th vs 1st quartiles), IMT-progression is not associated with individual global risk neither in primary nor in secondary prevention.

Conclusions: FRS and GRS reflect the lifelong, but not the short term, evolution of atherosclerotic disease.

Tu-P9:338   FLOW-MEDIATED VASODILATATION OF THE BRACHIAL ARTERY AND INTIMA-MEDIA THICKNESS OF CAROTID ARTERY IN NEVER-TREATED SUBJECTS

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Objective: Data on the association between brachial artery flow-mediated vasodilation (FMD) and common carotid intima-media thickness (IMT) are contrasting. The present study investigated the relationship between FMD and IMT and carotid atherosclerosis in never treated subjects.

Methods: Seventy-seven subjects were investigated: 46 had no coronary heart disease (CHD) risk factors, 21 had only one, and 10 had more than one risk factor. IMT was measured by ultrasonography and FMD was evaluated according to standardized methods.

Results: IMT increased with increasing number of risk factors (0.66 ± 0.12, 0.69 ± 0.12 and 0.80 ± 0.17 mm, respectively. ANOVA p< 0.05). FMD decreased with increasing number of risk factors (10.44 ± 5.20, 6.52 ± 7.11 and $7.35\pm4.42\%$, respectively, p< 0.05). Endothelium-independent vasodilatation was similar in the three groups. IMT and FMD did not correlate neither in subjects without risk factors (r=-0.151, p=0.3), nor in those with 1 (r=-0.196, p=0.4) or with 2 or more risk factors (r=-0.387, p=0.2), while in the group as a whole the correlation was borderline significant (r=-0.217, p=0.058). Eleven subjects had carotid atherosclerosis and higher values of IMT, but not reduced FMD. In multiple regression analysis, diabetes and IMT, but not FMD, were associated with carotid atherosclerosis.

Conclusions: The present findings indicate that, in never treated subjects, FMD is not strictly associated with IMT or atherosclerosis of the carotid arteries.

Tu-P9:339   EFFECT OF PITAVASTATIN ON THORACIC AORTA IN HYPERLIPIDEMIA EVALUATED WITH INTEGRATED BACKSCATTER AND THICKNESS BY TRANSESOPHAGEAL ECHOCARDIOGRAPHY

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Objectives: The effect of Pitavastatin (P) therapy on normal lesion (NL) and plaque (PL) morphology in the thoracic aorta (TA) was evaluated in hypercholesterolemic patients by transesophageal echocardiography.

Methods: Integrated backscatter (IB) in the intima-media complex, wall thickness (Th) at the same site and hsCRP were measured before and after P therapy or diet alone (D) for 7 months (P: n=12, D: n=11). IB in NL were measured in 107 patients to estimate age-dependent changes. Corrected IB values (cIB) were determined by subtracting those of the tunica externa.

Results: cIB of NL significantly increased with age, (r=0.87). hsCRP was significantly decreased from 2.3 ± 1.5 mg/L to 1.1 ± 1.0 by P. T.chol was decreased from 234 ± 25 mg/dL to 214 ± 24 by D and significantly decreased from 240 ± 30 mg/dL to 189 ± 15 by P. cIB and Th of NL by D were significantly increased from -18.8 ± 2.1 dB to -17.1 ± 1.7 and from 1.6 ± 0.5 mm to 1.8 ± 0.5 respectively. Those by P were significantly decreased from -16.9 ± 3.1 dB to -20.0 ± 3.4 and from 1.7 ± 0.3 mm to 1.5 ± 0.3 respectively. cIB and Th of plaque by D were significantly increased from -9.5 ± 3.7 dB to -7.4 ± 3.5 and from 3.7 ± 0.4 mm to 4.0 ± 0.5 respectively. Those by P were significantly increased -10.6 ± 3.3 dB to -6.7 ± 3.3, but significantly decreased from 4.0 ± 0.5 mm to 3.7 ± 0.5, respectively.

Conclusions: Pitavastatin significantly decreased IB and Th in NL and significantly increased IB and significantly decreased Th in PL, suggesting that P decreased the conversion of NL to atherosclerotic lesion and induced a stabilization and regression of PL in TA in association with a reduction of hsCRP.

Tu-P9:340   CHRONIC USE OF LIGHT OR HEAVY CIGARETTES AND CAROTID IMT

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Objective: To evaluate the effect of chronic use of light or heavy cigarettes on carotid intima media thickness (IMT).

Methods: Data from 1113 never-, 377 former- and 315 current-smokers were analysed. Among 692 former/current smokers, 435 were light- and 257 were heavy-smokers (packyear$\geq$30). 522 were users of high-nicotine ($\geq$0.7mg) cigarettes. 615 of high-tar ($\geq$7mg) cigarettes and 616 of high-carbon monoxide (CO) ($\geq$7mg) cigarettes.

Results: Years of smoking and number of cigarettes smoked per day (Cig/die) correlated with IMT better than packyear. In former smokers, the years elapsed since smoking cessation (YESSC) was a strong determinant of lower IMT. These variables, together with traditional risk factors were used as covariates in the successive categorized analysis. IMT was higher in current- (1.07 ± 0.25 mm) lower in former- (1.05 ± 0.34 mm) and lowest in never-smokers (0.93 ± 0.27 mm) (p< 0.0001). Similarly, IMT was higher in heavy- (1.13 ± 0.36 mm) lower in light- (1.01 ± 0.26 mm) and lowest in never-smokers (all p< 0.0001). On average, even after data adjustment for confounders, no difference in IMT was observed when low-nicotine vs high-nicotine or low-tar vs high-tar or low-CO vs high-CO cigarettes consumers were compared.

Conclusions: Light and heavy cigarettes have the same proatherogenic effect. Packyear, Cig/die, years of smoking and YESSC (in former-smoker) are important covariates that have to be taken into account when smoking habit is considered as vascular risk factor.

Tu-P9:341   THE ATHEROSCLEROTIC BURDEN, ASSESSED BY CAROTID ULTRASONOGRAPHY, IN LOW-RISK PATIENTS WITH DYSLIPIDEMIA

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Objectives: To investigate the potential benefits of screening for atherosclerotic burden in low-risk patients with dyslipidemia, in term of prevalence of carotid plaque detected by B-mode ultrasonography.