reported on associations between male pattern baldness, earlobe crease and xanthelasma, alone or in combination, and an increased risk of ischemic heart disease and myocardial infarction independently of chronological age and other classical cardiovascular risk factors.
Purpose: To examine the association of forehead wrinkles with all-cause and cardiovascular mortality.
Methods: From VISAT cohort, 3,221 French volunteer workers aged 32, 42, 52 and 62 years at baseline were recruited during medical examination carried out by occupational physicians. Forehead wrinkles were clinically assessed by investigators with the support of a set of graduated photos ranging from 0 (reference) to 3 (numerous and deep wrinkles). Statistical analyses were performed among participants without prevalent pathologies as cancers, cardiovascular, liver and kidney diseases. Crude and adjusted cox proportional analyses were used to determine the association between forehead wrinkles and all-cause and cardiovascular mortality over 20-year follow-up.
Results: In the course of the 19.5 year median follow-up, 7.2% (233) of subjects died; 2.1% in subjects with no wrinkle (score 0), 6.6% in score 1 and 15.2% in score 2&3 (p for trend <0.001). The Kaplan-Meier survival curve analysis showed a significant difference according to wrinkle scores (Log-rank test, $p<0.001$) with a higher pejorative temporal evolution in subjects with score 2&3. Using crude analyses and compared to wrinkle score 0, the risks of all-cause mortality death [Hazard Ratio (95% confidence intervals)] were: 3.05 (1.80–5.16) and 6.09 (3.54–10.5) in score 1 and score 2&3 respectively but became non-significant after multivariate adjustments. Unadjusted analysis showed increased risks of cardiovascular mortality when scores of forehead wrinkles increased: 4.94 (0.57–42.7) and 10.2 (1.09–95.7) in score 1 and 2&3 respectively, (p for trend<0.001). Forehead wrinkles remained significantly associated with cardiovascular mortality after multivariate adjustment on age, gender, education, smoking, systolic blood pressure, heart rate, diabetes and dyslipidemia. HRs were 5.69 (0.68–47.5) and 9.64 (1.09–85.3) for score 1 and score 2&3 respectively (p for trend 0.01).
Conclusion: In a working population, the number and the depth of forehead wrinkles were associated with cardiovascular mortality regardless chronological age and classical cardiovascular risk factors.
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P1549
Extreme risk category: prevalence among patients with stable coronary artery disease and treatment gap in achieving LDL-cholesterol <55 mg/dL

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Purpose: The latest guidelines from the American Association of Clinical Endocrinologists (AACE) and the American College of Endocrinology (ACE) proposed a new "extreme-risk" category of patients, for whom a low-density lipoprotein-cholesterol (LDL-C) level <55 mg/dL is advised. The aim of this study was to identify the proportion of patients with stable coronary artery disease (CAD) who are at extreme risk and explore how achievable is the new LDL-C goal.
Methods: We enrolled 1337 consecutive patients ≤80 years (mean age=61.2±9.5 years, men=1146) with stable CAD from the outpatient cardiology department. Fasting lipids were determined and by using the Dutch Lipid Clinic Network algorithm patients having probable or definite heterozygous hypercholesterolemia (HeFH) were identified.
Results: The prevalence of characteristics/risk factors suggesting an extreme risk were as follows: 27% diabetes mellitus (DM), 37.8% premature CAD (<55 years for men, <65 years for women) and 9.2% definite/probable HeFH. In total 736 (55%) patients had at least one of those characteristics and formed the extreme risk category. From patients at extreme risk 79% were taking statin monotherapy and 12% combination of statin and ezetimibe. Of extreme risk patients LDL-C levels <70 mg/dL had 19.8% and only 5.1% had LDL-C levels <55 mg/dL.
Conclusions: More than half of all stable coronary patients are at extreme risk and very few (~5%) have LDL-C levels <55 mg/dL. Using high statin dose combined with ezetimibe if necessary is imperative to close the treatment gap, while in selected cases the addition of PCSK9 inhibitors will be required.

P1550
Gender difference in cholesterol levels associated with coronary microvascular dysfunction

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Background: Recent studies have shown that patients with coronary microvascular dysfunction (CMD) have high rates of major adverse cardiac events such as acute myocardial infarction and cardiac death. Although CMD has been documented in patients with dyslipidemia, a possible gender difference in the cholesterol levels in patients with CMD has not been evaluated.
Purpose: To investigate the gender difference in cholesterol levels in patients with CMD.
Methods: In 120 consecutive patients with unobstructed coronary arteries, a novel index of microcirculatory resistance (IMR) was measured using a pressure/temperature-sensing coronary wire. After inducing maximal hyperemia using an intravenous infusion of adenosine triphosphate (180μg/kg/min), room-temperature saline was injected into the coronary artery to calculate the IMR. Coronary risk factors and blood biomarkers were assessed for each gender to evaluate their correlations with the IMR value.
Results: (1) When the patients were divided into two groups according to the median value of IMR, dyslipidemia (hazard ratio, 3.2; P=0.036) was a significant predictor of a higher IMR value in a multivariate analysis. (2) Compared with men, women exhibited stronger correlations between IMR and LDL-C (r=0.41 (women, 0.42 vs. men, 0.40), P<0.0001), apoB (r=0.39 (women, 0.52 vs. men, 0.33), P<0.0001), and non-HDL-C (r=0.32 (women, 0.49 vs. men, 0.26), P<0.0001). (3) In a receiver operator characteristic analysis of the median IMR value, the C-statistics were 0.71 for LDL-C (women, 0.74 vs. men, 0.69), 0.72 for apoB (women, 0.80 vs. men, 0.68), and 0.69 for non-HDL-C (women, 0.80 vs. men, 0.64), respectively.
Conclusions: High levels of cholesterol were associated with impaired coronary microcirculation more strongly in women than in men. Since CMD patients might have risk factors related to lipid metabolism, which are also seen in patients with coronary artery disease, lipid-lowering therapy for CMD patients to prevent cardiac events should be useful, particularly for women.

PREVENTION – CARDIOVASCULAR RISK ASSESSMENT, OTHER

P1551
Brachial stiffness beta-value is associated with vascular thickness and cardiovascular risk factors

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Background: The stiffness β-value has been used to examine the elastic properties of the carotid artery, and increased β-value was reported to be associated with coronary artery disease. Recently, we have been able to measure the β-value of the brachial artery using a novel semiautomatic vessel chasing system. The purpose of study was to determine the relationships β-value of the brachial artery and vascular structure, cardiovascular risk factors.
Methods: 577 subjects (381 males, mean age 67±11 years) with cardiovascular disease or risk factors of atherosclerosis, including hypertension (n=344), dyslipidemia (n=310), diabetes mellitus (n=219), coronary heart disease (n=301) were enrolled. Endothelial function of the brachial artery was evaluated by Flow mediated dilatation (FMD). Nitroglycerine-induced dilatation (NID) was used as a control test for FMD. At the same time, brachial β-value indicating arterial stiffness, and brachial IMT indicating vascular thickness were measured by UNEXEF18G (UNEX CO, Japan). Cardio-ankle vascular index (CAVI) was measured by VS-1000 (Fukuda Denshi, Japan).
Results: CAVI and brachial IMT was significantly correlated with brachial β-value, but FMD and NID were not correlated. Univariate regression analysis revealed that brachial β-value correlated with body mass index, waist circumference, systolic blood pressure. Multivariate analysis that male sex, systolic blood pressure, body mass index were independent predictors of brachial β-value.
Conclusions: Brachial β-value is associated with vascular thickness, providing additive information for subjects with cardiovascular risk factors.

P1552
High cardiovascular risk is associated with the degree of fibrosis in non alcoholic fatty liver disease

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Background: Many patients with non alcoholic fatty liver disease (NAFLD) simultaneously suffer from cardiovascular diseases and often carry multiple cardiovascular risk factors. Several cardiovascular risk factors are known to drive the progression of fibrosis in NAFLD.
Purpose: To investigate whether established cardiovascular risk scores such as the Framingham risk score (FRS) and the Heart Score of the European Society of Cardiology (HS) are associated with the degree of fibrosis in NAFLD in a large screening cohort.
Methods: We screened 2138 asymptomatic subjects (59.6±10.2 years, 50% males, BMI 27.2±4.6 kg/m^2). The diagnosis of NAFLD was labeled if 1. (Areas of significant increased echogenicity in relation to the renal parenchyma present in right upper quadrant ultrasound) and 2. (Exclusion of viral, autoimmune, hereditary [Wilson's disease, HFE-associated hereditary hemochromatosis, alpha-1 an-