FAC, strain, strain rate were significantly lower in both patients of diabetes and hypertension. After adjusting for blood pressure and heart rate, there were no more differences of FAC, strain, and strain rate between the patients and control groups. However, Tv-SD, Ts-SD, Tsr-SD were significantly higher in both patients groups compared with healthy controls even after adjusting for blood pressure and heart rate. Vascular properties between the patients of diabetes and hypertension were not different.

Conclusions: Before the progression of IMT, carotid arteries of patients with diabetes or hypertension have subtle arteriosclerotic change compared with healthy controls. Assessment of vascular properties with using of VVI provides more elaborate information of subclinical arteriosclerosis.

P4724 Potential role of low kV ex vivo micro-CT for 3D morphometry of paraffin embedded coronary vessels before histology

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Purpose: Micro CT is an established tool for non destructive 3D inspection of small specimens. Aim of the study was to demonstrate that despite its limitations in differentiation of soft materials, micro CT can reliably display coronary vessel structure and surrounding tissues after paraffin embedding. Data were obtained from coronary specimens of pig, physical phantoms and numerical simulations. Preliminary images with dual-energy techniques are also shown.
Methods: A micro CT scanner built by our group was used for the experiments. The x-ray tube was set up in the range of 20-50 kV; the voxel size was set to 21 μm. A phantom composed of formalin fixed fat and myocardium of rat, dehydrated and paraffin embedded, was used to measure the contrast of different tissues with respect to background. Similar acquisitions were simulated numerically. Real samples of pig excised coronary arteries were processed in the same way and acquired with the same settings; resulting images were compared to those obtained by histology.
Results: In phantom, the myocardium contrast vs. paraffin varied from 40% at 20 kV to 29% at 50 kV. The fat contrast vs. background was 2% at 20 kV, whereas it was indistinguishable from the background at 50 kV; all the contrasts in phantom appeared lower than those expected from simulations, probably because of tissue shrinkage. In the samples from pig (see Figure), the vessel wall contrast was 25% greater than the myocardium contrast; the pericardium and a balloon induced stenosis were clearly distinguished. All micro CT scans were shorter than 1 hour.
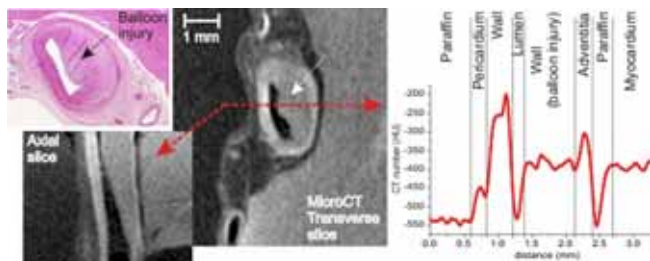
Conclusion: Micro CT is a useful complementary tool for the 3D morphometry of coronary vessels after paraffin embedding, and it can help for the preliminary identification of features of interest for subsequent histological analysis.

P4725 Uptake of aluminium phtalocyanine in endarterectomy carotid plaques in human: study in vitro

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Background: Photodynamic approach is assumed as a perspective method for atherosclerotic lesions detection and photodynamic therapy in human arteries. Accumulation of photosensitizer in vascular wall is a critical point in this procedure. The aim of this study was to reveal phtalocyanine uptake in endarterectomy carotid plaques after in vitro loading.
Methods: Carotid endarterectomy was performed in thirty patients (m/20 f/10; mean age 67±9 y; mean cholesterol 5,4±1,3 mmol/L). Thirty plaques after carotid endarterectomy were cultured overnight in DMEM with 10% FCS and 10 ug/ml of aluminium phtalocyanine (Al-PS, NIOPIK, Russia), carefully washed out and cryostate sections were prepared. Sections were analysed in fluorescent microscope Leika DM 5000B and morphometric analysis was performed to reveal Al-PS accumulation in different parts plaques. Areas differed in Al-PS uptake were characterized with histologic and immunocytochemical approaches.
Results: 2-3 pieces of each plaque were analysed. Highly cellular plaque segments showed markedly increased fluorescence as compared to an acellular atherosclerotic matrix. Al-PS preferentially accumulated in plaque's caps, shoulders and peripheral areas of plaque cores. These areas had highest fluorescent

intensity and were characterized with high cellularity and immunocytochemically these cells were identified as macrophages, lymphocytes and smooth muscle cells. Fluorescence and immunohistochemical analysis showed that the fluorescence intensity of Al-PS was positively correlated with macrophage (r = 0.32, P<0.05) content in plaque's caps; macrophage (r = 0.63, P<0.001) and lymphocyte (r = 0.3, P<0.05) content in plaque's shoulders; macrophage (r = 0.61, P<0.001) and lymphocyte (r = 0.4, P<0.001) content in peripheral areas of plaque cores.
Conclusion: Al-PS accumulation was assosiated with high macrophages and lymphocytes content in endarterectomy plaques and may be a useful tool for imaging of metabolically active areas and treatment of atherosclerotic lesions.

P4726 Trends in baseline carotid intima-media thickness (cIMT) and LDL-C levels in statin LDL-C lowering studies during 1988-2008

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Purpose: The predictive power of cIMT, a surrogate marker of CVD risk, may be limited in some settings due to study differences (eg study design, methods, patient characteristics). This survey evaluated trends over time in baseline cIMT thickness and LDL-C levels in various populations of published cIMT, statin LDL-C lowering studies.
Method: Exploratory analysis of study level data for statin treatment arms from 17 published studies conducted 1988-2008. Baseline mean CCA, mean cIMT, max cIMT and LDL-C levels were summarized for the overall population of studies conducted before/after 2000 and studies that enrolled patients based on CHD risk, hFH or thickened baseline cIMT.
Results: Baseline mean CCA/cIMT (BMnIMT) levels were higher in populations of the combined studies and within CHD risk, hFH or thickened baseline cIMT studies conducted before 2000 than after 2000 (table). BMnIMT levels were slightly greater in patients with CHD risk vs those without, before and after 2000. In studies conducted before 2000, BMnIMT levels were slightly lower in patients with hFH and thickened baseline cIMT than those without; levels were comparable in both groups after 2000. Similar time trends were observed using max cIMT measurements (not shown). Mean baseline LDL-C values were also higher in studies before 2000 than after 2000 in most study populations. Notably, all studies conducted prior to 2000 in this analysis were significant for the primary cIMT endpoint, whereas more than half of those conducted after 2000 did not reach statistical significance.

Population	Studies before 2000[†][*]			Studies after 2000[‡][**]		
	N	Baseline mean CCA/cIMT (mm)	Baseline LDL-C mmol/l (mg/dL)	N	Baseline mean CCA/cIMT (mm)	Baseline LDL-C mmol/l (mg/dL)
Overall	2836	0.98	4.69 (180.9)	5407	0.76	4.01 (154.7)
CHD risk[§]						
+	1662	1.04	4.28 (165.2)	752	0.83	2.60 (100.4)
−	1174	0.90	5.26 (203.2)	4655	0.74	4.23 (163.5)
hFH[§]						
+	578	0.89	6.39 (246.8)	1785	0.75	3.61 (139.3)
−	2258	1.01	4.25 (164.0)	3622	0.76	4.20 (162.3)
Thickened baseline cIMT[§]						
+[¶]	596	0.90	4.17 (160.9)	876	0.76	4.01 (154.7)
−	2240	1.00	4.82 (186.2)	4531	0.76	4.01 (154.7)

CCA = carotid coronary artery; CHD = coronary heart disease; hFH = heterozygous familial hypercholesterolemia. Baseline mean CCA/cIMT and LDL-C are weighted means (by sample size for each study), unadjusted for other factors that may influence cIMT. Studies before 2000 (based on median study enrollment start/end dates) included [†]mean CCA (ACAPS, ASAP, BCAPS, KAPS, LIPID) and mean cIMT (ASAP-Extension, REGRESS); studies after 2000 included [‡]mean CCA (ARBITERI, METEOR, RADIANCEI, RADIANCEII, ENHANCE, SANDS, ARBITERII, ARBITERIII) and mean cIMT (CAPTIVATE, CASHMERE); [*]all 7 studies significant for cIMT change; [**]6/10 studies non-significant for cIMT change; [§]study-entry criteria; [¶]based on entry-criteria of mean CCA (BCAPS) and maximum cIMT (METEOR).

Conclusion: Baseline cIMT and LDL-C values were lower in study populations of statin cIMT trials conducted after 2000 compared with before 2000. These trends are consistent with increased treatment and control of high LDL-C levels over recent years in clinical practice, and may partially explain the varying outcomes of cIMT studies.

P4727 Noninvasive assessment of carotid plaque inflammation: first clinical application of microwave radiometry

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Background: Carotid plaque inflammation plays a central role in plaque progression. Currently there is no available method to assess the degree of inflammation