P3134 | BEDSIDE
Acute coronary syndrome in young adults

Introduction: The incidence of coronary disease is positively associated with age. However, in recent years there has been an increased incidence of Acute Coronary Syndromes (ACS) in young adults. The cardiovascular risk profile of these patients appears to be different.

Aim and population: To determine cardiovascular risk factors, clinical presentation, angiographic findings and prognosis of young patients consecutively admitted for ACS in a Coronary Unit over a 3 years period.

Results: The study population consisted of 1367 patients. Males were predominating (77.4%) and the mean age was 63.98±13.22 years old. 8.16% of subjects were aged <45 years (group 1) and 91.84% ≥45 years (group 2). Male gender (p<0.001) and smoking (p<0.001) were more prevalent in group 1. The prevalence of diabetes mellitus (p<0.001), arterial hypertension (p<0.001), Stable Angina (p<0.002) and prior Acute Myocardial Infarction (AMI) (p=0.026) was higher in group 2. No significant differences were observed regarding to the bleeding Angina (p=0.002) and prior Acute Myocardial Infarction (AMI) (p=0.026). Group 1 had higher levels of LDL-cholesterol (p<0.001), total-cholesterol (p<0.001) and triglycerides (p<0.001), and lower levels of HDL-cholesterol (p<0.001). Myocardial Infarction with ST segment elevation occurred in 62.2% of subjects in group 1 and 50.2% in group 2. Multivessel disease was more common in group 2 (p<0.001), while the single-vessel disease was more common in group 1 (p<0.001). Group 2 had a worse prognosis, with greater occurrence of heart failure (p<0.001) and death (p=0.047) during hospitalization.

Conclusions: Our study showed a different profile risk in younger individuals, in which smoking and dyslipidemia were the main modifiable cardiovascular risk factors. This reinforces the need for early institution of primary prevention measures. The younger population had less extensive coronary disease and better prognosis.

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Effect of admission cholesterol levels on acute coronary syndromes' outcome
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Introduction: Hypercholesterolemia is a major risk factor for ischemic heart disease. Less is known about the impact of cholesterol levels in the course of an acute coronary syndrome (ACS).

Methods: Participants in a nationwide ACS registry who had a complete lipid profile in the first 24 hours after hospitalization were selected. Data on 1694 patients (68.6% male, median age 67 years, total number of patients included on the registry) were analyzed. Patients were divided accordingly to LDL-cholesterol (LDL) and HDL-cholesterol (HDL) tertiles. LDL groups were T1 ~98 mg/dl, T2: 88-128 mg/dl and T3 >128 mg/dl and HDL tertiles were T1 ~<35 mg/dl, T2: 35-42 mg/dl and T3 >42 mg/dl. The occurrence of in-hospital re-infarction, heart failure and death was compared according to LDL and HDL tertiles.

Results: Patients with lower LDL levels were older (mean age 70.5 years in group T1, 65.1 years in group T2 and 60.9 years in group T3, p<0.001), more frequently diabetic (39.4%, 26.6% and 17.6%, p<0.001), less often admitted with STEMI (41.4%, 46.4% and 49.8%, p<0.001) and underwent percutaneous coronary intervention (PCI) less frequently (60.6%, 65.6% and 73.9%, p<0.001). Prevalence of diabetes was higher in patients with lower HDL levels (33.1% in tertile T1, 26.3% in T2 and 24.5% in T3, p<0.01). No association was found between re-infarction and HDL LDL levels. Killip class I was more frequently found in patients with lower LDL (33.6% in T1, 23.4% in T2 and 19.5% in T3, p<0.001) but no association was found with HDL levels (3.0%, 1.8% and 2.9%, p=0.30). After adjusting for age, systolic blood pressure, admission diagnosis, admission blood glucose, previous use of beta blockers and coronary angiography during hospitalization, LDL levels remained significantly associated with in-hospital mortality (OR [T1] 3.99, 95% CI 1.30-12.42, OR [T2] 3.70, 95% CI 1.14-12.02). No association or interaction was found with previous use of statins.

Conclusions: Low LDL levels were associated with increased in-hospital mortality in ACS patients. It seems that high cholesterol levels could be marker of improved survival not only in chronic diseases, as heart failure, but also in ACS.
patients, without additional costs and risks of contrast infusion of coronary angiography.

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Blockade of platelet alpha2B-adrenergic receptors in patients with coronary artery disease: a novel antiaggregant mechanism
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Purpose: Platelets play a vital role in hemostasis and thrombosis. Catecholamines have a profound effect on platelet aggregation and atherothrombosis but the exact mechanism involved is insufficiently understood. In this report, we demonstrate the role and α2B-adrenoreceptors receptors (α2B-ARs) in platelets from patients with Coronary Artery Disease (CAD) compared to normal individuals.

Methods: Sixteen healthy individuals and 7 patients with CAD who were under dual antiplatelet therapy with clopidogrel 75mg and acetylsalicylic acid 100mg were included. Blood samples were obtained from which platelets were isolated. The presence of α2B-ARs in platelets was proven by Western blot analysis and real-time PCR. In order to investigate their function, we performed perfusion light transmittance aggregometry by examining the inhibitory effects of specific α2B-AR antibodies.

Results: Pre-treatment of human platelets with agents that selectively block α2B-ARs showed a substantial inhibition in platelet aggregation that had been induced by adrenaline diphosphate (ADP), by epinephrine and by arachidonic acid. The platelet aggregation decreased from 81.5±6.7% to 35.8±5.0% for ADP with α2B-ARs, from 72.2±1.9% to 25.5±4.3% for epinephrine with α2B-ARs, and from 87.2±2.1% to 47.9±6.2% for arachidonic acid with α2B-ARs, p<0.05 for all. Patients with CAD showed a significantly reduced expression of the receptor in the platelets (149.6±22.1% to 19.1±2.7%, p=0.015). Notably, pre-treatment with α2B-ABs resulted in a significant further reduction of platelet aggregation. The ADP-treated plasma showed a significant reduction in platelet aggregation with pre-treatment with α2B-ABs (42.5±6.8% for the control group versus 31.7±2.2% for the group with α2B-ABs pretreatment, p=0.001). When arachidonic acid was used to induce aggregation, pre-treatment with α2B-ABs reduced platelet aggregation from 41.3±7.3% to 28.2±7.5%, p=0.006. Similarly, the presence of α2B-ABS decreased platelet aggregation induced by epinephrine from 44.4±22.1% to 19.1±7.2% (p=0.01).

Conclusions: Our results reveal that contrary to previous knowledge, the α2B-AR subtype does exist in platelets and is an important regulator of aggregation. Inhibition of α2B-ARs in platelets may offer a novel therapeutic opportunity in the prevention of atherothrombotic events. Interestingly, even in patients with coronary artery disease who were receiving dual antiplatelet therapy with aspirin and clopidogrel, the inhibition of α2B-ARs had an additional antiaggregant effect.

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Serum sclerostin levels are independently associated with coronary artery calcium score and carotid artery atherosclerosis in maintenance hemodialysis patients
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Background: Sclerostin is a protein expressed by osteocytes that has been shown to be associated with renal osteodystrophy and aortic valve calcification in dialysis patients. The aim of this study was to examine the association of serum sclerostin levels, coronary artery calcium score (CACS) and carotid artery intima media thickness (CIMT) in maintenance hemodialysis patients.

Material and methods: Seventy two patients (38 females and 34 males) were subjected to 64 slice coronary computed tomography to evaluate coronary artery calcification. Moreover, patients underwent B mode ultrasonography of common carotid arteries and measuring CIMT and evaluating carotid intima-media thickness. Serum sclerostin levels were measured by an ELISA (R&D Systems, Minneapolis, MN).

Results: Mean serum sclerostin level was higher compared to healthy age and gender matched controls (147±948 vs 120±502 pg/ml, p<0.001). Correlations between CACS and serum sclerostin levels (r=0.394, p=0.044, coefficient of determination (R2)=0.471, p=0.004) and age (r=0.390, p=0.006) were noted. A negative but insignificant correlation was obtained between serum sclerostin levels and CACS (r=0.162, p=0.245). Multivariable adjusted regression analyses revealed that increased serum sclerostin concentrations were independently associated with increased CACS (21.8% increase per 1-SD increase in sclerostin concentration, P = 0.04).

On the CIMT analysis, serum sclerostin levels were positively correlated with CIMT (r=0.439, p=0.001) while serum 25-hydroxy D3 levels were negatively correlated (r=0.308, p=0.002). Patients with plaques on carotid arteries had higher serum sclerostin levels compared to ones with no plaques (228±1681 vs 1174±917 pg/ml, p=0.016). Multivariable-adjusted regression analyses (also corrected for serum 25-hydroxy D3 levels and calcitriol use) revealed that increased serum sclerostin concentrations were independently associated with increased CIMT (32% increase per 1-SD increase in sclerostin concentration, P = 0.04).

Conclusions: In this work, independent associations of serum sclerostin levels with both CACS and CIMT were noted. The pathophysiological impact of these results need further investigations.

P3140 | BEDSIDE
Clinical outcome in cardiodial patients related to coronary computed tomography angiography and serum adrenomedullin
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Background: Adrenomedullin is present in numerous human body tissues and its powerful vasoelastatory activity is thought to play role in cardiovascular/renal homeostasis and possibly in atherosclerosis. We conducted a prospective 2-year study of one hundred twenty-three patients with chronic kidney disease (CKD).

Clinical outcome was analyzed to coronary computed tomography angiography (CTA) findings and serum adrenomedullin levels.

Methods: We determined plasma mid-regional pro-adrenomedullin (MR-ADM) in 123 patients with suspected coronary artery disease (mean age 62.5±10.7 years, 57.7% male, arterial hypertension 89.2%, type 2 diabetes 25.2%, 29.0% had a history of tobacco use and 38.2% were on regular haemodialysis- mean 51.7 months, ranging from 3 to 252 months). On CCTA, 76 pts (65.0%) had no coronary artery disease (CAD), in 29 pts (24.8%) one significant epicardial stenosis and in 12 (10.3%) multivessel disease were documented. The mean MR-ADM plasma levels and CAD score were 1.4 nmol/l and 472.8, respectively. The MR-ADM correlated with CAD (r=0.25, p=0.02), MR-ADM vs duration of hemodialysis (r=-0.75, p<0.001), total cholesterol and LDL-cholesterol (r=0.36, p=0.02) and r=0.34, p=0.001. During follow-up period (18.4±6.2 months) 7 cardiovascular deaths were occurred and 1 patient underwent percutaneous coronary intervention for unstable angina. The main characteristics in pts with cardiac events or eventfree survival were the following: serum MR-ADM (2.5 vs 1.3 nmol/l), CAD (663.7 vs 482.5). When we compared these variables to cardiac events only significant difference was documented in MR-ADM levels (p=0.04). Otherwise, areas under receiver operating characteristic curve (AUC) for prediction of cardiovascular mortality were the following: serum MR-ADM (0.65 vs 0.51), CAC (0.69 vs 0.59).

Conclusions: Coronary computed tomography angiography and serum adrenomedullin represent new alternative diagnostic tools for risk stratification in special group of cardiodial patients.

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320 slice CTA-based aortic wall tissue invasion into ostium of left main coronary artery did not have relationship with coronary risk factors and coronary arteriosclerosis and stenosis on CT and conventional coronary angiography (CAG)
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Purpose: Aortic wall tissue invasion (AWTI) to the ostium of left main coronary artery (LMCA) is frequently observed on CT, which sometimes might be non calcified plaques on LMCA and are ignored as their significance is unclear. To evaluate the significance of AWTI to the ostium of the LMCA on CT, we examined the relationship between AWTI and CA risk factors, coronary arteriosclerosis and stenosis on CT and conventional coronary angiography (CAG).

Methods: Data on 123 consecutive subjects (70 male, mean age 64 y) who underwent both enhanced 320-slice CT and CAG within 3 months of each other were retrospectively reviewed. Calcium volume (CV) calculated from coronary calcium score (Agatston) and >50% and >75% luminal stenosis on both CT and CAG were evaluated.

Results: AWTI to the ostium of LMCA on CT was observed in 75 subjects (50 male, mean age 65 y) (Group 1) and not observed in 28 subjects (20 male, mean age 69 y) (Group 2). The main characteristics in pts with AWTI vs those without were the followings: serum MR-proADM (2.5 vs 1.3 nmol/l), CAC (663.7 vs 482.5). When we compared these variables to cardiac events only significant difference was documented in MR-ADM levels (p=0.04). Otherwise, areas under receiver operator characteristic curve (AUC) for prediction of cardiovascular mortality were the following: serum MR-ADM (0.65 vs 0.51), CAC (0.69 vs 0.59).

Conclusions: Coronary computed tomography angiography and serum adrenomedullin represent new alternative diagnostic tools for risk stratification in special group of cardiodial patients.