Administration of Cyclosporine A during Pregnancy Causes Elevated Blood Pressure and Reduced Glomerular Number in the Offspring

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Background: Cyclosporine A (CsA) is often used immunosuppressive agent in the variety of clinical conditions. *In utero* exposure to immunosuppressive drugs may influence organogenesis of the offspring with a potentially increased risk of hypertension and CKD in adulthood. The aim of this study in rats was to assess the effect of exposure to CsA during the gestation on blood pressure (BP) as well as on number and volume of glomeruli in the offspring.

Methods: Eight pregnant Sprague-Dawley rats were assigned to CsA (3 mg/kg/day s.c. from day 10 after fertilization till day 7 after delivery) or solvent (saline) respectively. BP in the offspring was measured indirectly on tail artery during isoflurane anesthesia, 7 and 11 weeks after birth. 12 weeks after delivery the experiment was terminated. The number and volume of glomeruli was assessed using unbiased stereological methods.

Results: At age 7 weeks and 11 weeks respectively in the 34 offspring of the mother rats treated with CsA systolic (SBP) and diastolic (DBP) blood pressures were higher than in the 31 offspring of pregnant rats treated with solvent (7^{th} week - SBP: 125±5 vs. 117±6mmHg, $p<0.001$; DBP: 82±6 vs. 77±6mmHg, $p<0.001$; 11^{th} week - SBP: 132±9 vs 126±7mmHg, $p<0.05$; DBP: 89±8 vs. 83±7mmHg, $p<0.001$). The number of glomeruli was lower (19,524±758 vs. 24,017±861, $p<0.001$) and the mean glomerular volume higher (2.44±0.32 vs. 1.68±0.19 x $10^6 \mu m^3$, $p<0.001$) in offspring of pregnant rats treated with CsA compared to the offspring of pregnant rats treated with solvent.

Conclusions: 1. Treatment with CsA during pregnancy increases blood pressure in the offspring, decreases the number of glomeruli and increases the volume of glomeruli in the offspring of rats. 2. These findings are of concern because lower numbers of glomeruli are known to increase the risk of hypertension and CKD in adult life.

Poster 2

A Randomised Placebo-Controlled Clinical Trial to Study the Effect of Vitamin D_3 Supplementation on Markers of Glycaemia, Oxidative Stress and Lipidemia in Poorly-Controlled T2DM

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Background: Diabetes mellitus type 2 (T2DM) pathogenesis has been associated with vitamin D deficiency which plays a role on impaired human insulin action. Around 88% of Saudi men, being categorised as vitamin D deficient (25(OH) D3 supplementation on biomarkers of glycaemia, oxidative stress and lipidemia in Saudi males aged >18 years with poorly controlled T2DM.

Methods: A double-blind, randomized, placebo-controlled, parallel trial was used to investigate 104 Saudi males with poorly-controlled T2DM randomised to receive: 1) a placebo supplement, 2) 50µg/day vitamin D_3 day or 3) 100µg/day vitamin D_3 as capsules matching in shape and size over a 16 week period. Fasting glucose, HbA_{1c}, fasting insulin, lipid profile, serum 25(OH)D, total antioxidant status were measured and skin advanced glycation endproducts (AGEs) were also measured using an AGE-reader.

Results: The mean average BMI was 31.43 for the first timepoint; HbA_{1C} 8.9%; AGEs 2.51 ; calcium 2.35 mmol/l and lipid profiles were cholesterol 4.52 mmol/l, HDL 0.97 mmol/l, and triglycerides 2.39 mmol/l.

Conclusions: It is expected that the findings will reveal the role of vitamin D_3 supplementation and whether it can reduce oxidative stress complications, tissue AGEs, lipidemia and insulin resistance in Saudi males with T2DM.

Poster 3

Total Longitudinal Displacement of the Common Carotid Artery Does not Differ between Patients with Moderate or High Cardiovascular Risk and Patients after Acute Myocardial Infarction

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Background: Total longitudinal displacement (tLoD) of the common carotid artery (CCA) wall is a novel ultrasound marker of vascular function that can be evaluated using modified speckle tracking techniques. Decreased CCA tLoD has already been shown to be associated with diabetes and was shown to predict one year cardiovascular outcome in patients with suspected coronary artery disease (CAD) . The aim of our study was to evaluate if CCA tLoD differ between patients with moderate or high cardiovascular (CV) risk and patients after recent acute myocardial infarction (AMI).

Methods: 49 patients (54±6 years) with moderate or high CV risk and 42 patients (58±7 years) after recent AMI were included. All patients were non-diabetic. CCA tLoD was evaluated using GE EchoPAC speckle tracking software and expressed as mean of both sides. Data on systolic blood pressure, total and high density lipoprotein (HDL) cholesterol levels, high sensitivity C-reactive protein (hsCRP) level, smoking status and family history of early CV events was evaluated and assessed for association with CCA tLoD.

Results: tLoD of CCA did not differ between patients with moderate or high CV risk and patients with very high CV risk after MI (0.265±0.128 mm vs. 0.237±0.103 mm, $p>0.05$). Lower tLoD was associated with lower HDL cholesterol levels ($r=0.211$, $p=0.04$) and male gender (0.228±0.1 vs. 0.297±0.134, $p=0.01$).

Conclusions: tLoD of CCA did not differ between patients with moderate or high CV risk and patients with very high CV risk after AMI. However, lower CCA tLoD was significantly associated with low HDL cholesterol levels and male gender.

Poster 4

Blood Pressure in Adolescent Athletes at Preparticipation Physical Examination

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Background: It is known that physical activity lowers blood pressure (BP), yet high BP is frequent disorder found during the preparticipation physical evaluation of athletes. However, information on the prevalence of hypertension (HTN) in athletes is still missing, especially in young athletes. We assessed the prevalence of point high BP in a group of young athletes and association between high BP and excess body weight (BW), whereas obesity in children is recognized as important risk factor for the development of HTN.

Methods: A group of 64 male athletes, 37 football players and 27 martial arts athletes participated in the study. The median age of athletes was 16.5 years (range 14-18 yrs). Blood pressures and anthropometric indices were measured using standard protocols at a preparticipation screening in outpatient sports clinic. BP was measured using a mercury sphygmomanometer. In case of elevated BP measurement, second measurement was done and systolic BP (SBP) and diastolic BP (DBP) were recorded as a mean of two values. According to International Pediatric Hypertension Association`s guidelines, BP values were categorized by centiles for sex, age and body height. Elevated BP is defined by SBP and/or DBP equal or greater to 90th centile. Excess BW is defined with BMI equal or greater to 85th centile.

Results: Prevalence of elevated BP in football players was 40.5% (15/37), and in martial arts athletes was 55.6% (15/27). Excess BW has 13.5% (5/37) football players and 33.3% (9/27) martial arts athletes (chi-square=3.588, p=0.058). Positive association between excess BW and elevated BP was found (chi-square=10.23, p=0.0014).

Conclusions: Health professionals working with children must be aware that obesity is important risk factors for high BP. Having in mind health risks associated with overweight and obesity, body mass should not be expected and promoted as it's a practice in certain sports and team positions.

Poster 5

Young Patient Presented with Hypertensive Urgency that Diagnose to Have Malignant Phaechromocytoma

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31 year old young lady presented with 15kg weight loss for the last 1 year, polyuria and polydipsia for 1 month. On examination she was alert and found to have B.p 220/120 mmhg ,pulse 120/min afebrile also perspiring on abdominal examination found to have fullness at left flank, cardiovascular examination she was tachycardiac with S4 gallop otherwise examination was unremarkable. Blood examination shows hypercalcemia of calcium levels 2.7 mmol/l and also found to have newly diagnosed diabetes mellitus. EKG shows LVH strain pattern and hypertensive changes.

CT abdomen and pelvis was done to evaluate for left flank fullness and also there was suspicion of phaechromocytoma, ct scan shows large heterogenous mass 9cm at left adrenal gland suspicion of phaechromocytoma, also 24 hours urine catecholamines/metanephrines also found to be very high. She underwent left adrenalectomy and biopsy also confirms malignant phaechromocytoma. Post procedure her blood pressure came down also noted urine catecholamine/metanephrines significant down trending. On her recent clinic visit b.p was 120/80 mmg with only tab atenolol 25mg once a day. Malignant phaechromocytoma is very rare disease and in Singapore only 7 cases reported from 1997 to 2007,although its rare but still need to consider in young patient presented with hypertensive urgency and needs further workup.

Poster 6

Prevalence of Prehypertension and Hypertension and Association with Agility/Dinamic Balance

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Background: Hypertension may negatively affect locomotor function and increase fall risk.

Objectives: To assess the prevalence of prehypertension and hypertension and association with agility/dynamic balance.

Methods: A cross-sectional study was carried out in a random sample (n=211) of Spanish community-dwelling men (n=100, aged 55-80 years) and women (n=111, aged 60-80 years). According to the JNC7, prehypertension was defined as blood pressure (BP) 120-139 mmHg systolic and/or 80-89 mmHg diastolic. Participants with hypertension were defined as those who were currently taking medications for hypertension, and/or those whose systolic BP was ≥140 mmHg and/or diastolic BP ≥90 mmHg. Physical performance measures included the agility/dynamic balance test (8-foot Timed Up-and-Go, 8-F TUG). Low execution time in the 8-F TUG test was defined using the cut-off points presented by age and gender (Rikli & Jones, 2013).

Results: Normotension, prehypertension and hypertension were 7.6% (n=16), 31.8% (n=67) and 60.7% (n=128) respectively, with no significant difference between gender (P=0.916). In the hypertensive group, 44.5% of participants were taking BP medications. Moreover, 34.0% of men (n=34) and 63.1% of women (n=70) registered low scores in the 8-f TUG test (P<0.001). Low scores in the 8-f TUG test were directly associated with BP groups in both genders. Overall, 1 to 16 normotensive participants, 31 to 67 prehypertensive participants and 72 to 128 hypertensive participants had low 8-f TUG (P=0.001).

Conclusions: BP not only leads to cardiovascular disease but also impacts balance and gait, which are mediators of the quality of life.

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Poster 7

Early Detection of Right Ventricular Dysfunction in Hypertensive and Obese Women

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Background: Obesity is an independent risk factor for cardiovascular diseases. The association between body weight and blood pressure is well established. Left ventricular (LV) performance in hypertension is well described in numerous publications. However, little is known about the right atrial (RA) and right ventricular (RV) changes in patients with hypertension and concurrent obesity.

The aim: To assess by echocardiography the RA and RV function in obese women with or without hypertension.

Methods: 40 obese women- 21 with hypertension (age 59.63±5.26 years) and 19 without hypertension (age 58.20±4.70 years) were investigated with Phillips HD15. Conventional 2D echocardiography, Continuous wave (CW), Pulse wave (PW) and PW- Tissue Doppler imaging (TDI) were used to assess the right heart (RV and RA) structure and function. Offline 2D speckle- tracking analysis was performed with QLAB Release 10.3 software to asses RV and RA global longitudinal strain (GLS). Statistical tests were performed with SPSS version 16.0 and p value < 0.05 was considered to be statistically significant.

Results: No significant difference between two groups was observed in RV and RA structural indices. A significant lower peak systolic velocity (S`) and decreased early (E`) to late (A`) velocity ratio by PW- TDI was found in the hypertensive women. We found positive correlation between RV GLS and fractional area change (FAC%, $p<0.001$, $R=0.587$) and between RA GLS and RA total ejection fraction (EF%, $p<0.001$, $R=0.501$).

Conclusion: The results of our study demonstrate early disturbances of RV systolic and diastolic function. The decreased S` peak can be a consequence of combined hemodynamic effect of obesity and hypertension. The lower E`/A` ratio demonstrate impairment of RV relaxation. These changes can be explained with RV remodeling associated with both hypertension and obesity.

Poster 8

The Combined Effect of Obesity and Hypertension on the Left Heart Structure and Function in Women

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Background: Obesity is with increasing prevalence and represents an independent risk factor for cardiovascular disease. The combined effect of obesity and hypertension on female`s heart is not well established.

Aim: To evaluate the combined effect of obesity and hypertension on the left heart structure and function in women.

Methods: 33 obese women (BMI 25-35 kg/m^2) with hypertension (59.06±5.21 years), 19 age- matched hypertensive women without obesity and 12 age- matched healthy women underwent conventional, Pulse-wave Doppler, Tissue Doppler imaging echocardiography to assess left heart structure and function. Offline 2D speckle - tracking analysis was performed with QLAB Release 10.3 software to asses LA and LV global longitudinal strain (GLS). Statistical tests were performed with SPSS version 19.0 and p-value 0.05 was considered to be statistically significant.

Results: Left atrial dimension was significantly increased in hypertensive obese women (32.38±4.85 mm) compared to healthy women (29.19±1.94 mm) but similar to hypertensive women without obesity (28.96±4.45 mm), p=0.013. Left atrial GLS was significantly decreased in hypertensive (40.9±8.95 %) and hypertensive and obese patients (40.5±9.13 %) than in controls (53.78±8.32 %), p0.0001. Left ventricular mass index was increased in hypertensive and obese group (91.5±22.36 g/m2) than in healthy patients (67.54±11.22 g/m2) but similar to hypertensive group without obesity (93.6±27.9 g/m2), p=0.005. Interventricular septum was thicker in hypertensive and obese patients (12.13±2.19 mm) compared to controls (10.22±1.65 mm) but similar to hypertensive patients (12.38±1.93 mm), p=0.019.There were no significant differences in other LA and LV structural and functional indices. Higher LV mass index is associated with increased LA dimension (r= 0.448, p0.0001) and reduced LA GLS (r= -0.482, p0.0001).

Conclusion: Coexistence of obesity and hypertension impairs LA performance and geometry, but also alters LV structure. These changes can be explained with combined hemodynamic effect and neurohumoral activation, leading to cardiac remodeling.

Poster 9

Pentraxin 3, Thrombospondin-1 and Endoglin plasma levels in hypertensive patients treated with Angiotensin II Receptor Antagonists

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Objective: This study was aimed to investigate and correlate some new biochemical markers of endothelial dysfunction: Pentraxin 3 (PTX3), Thrombospondin 1 and Endoglin with consecrated functional and structural markers of endothelial dysfunction: flow mediated vasodilation (FMD) and intima media thickening (IMT), in a group of patients with essential arterial hypertension.

Methods: We studied a total of 138 hypertensive patients, 60 of them treated with Angiotensin II Receptor Antagonists and 78 with other hypotensive medication, both groups with controlled values of blood pressure. We correlated classical methods of assessment of endothelial dysfunction with some new biochemical markers.

Results: All the patients in the study had an endothelial dysfunction, confirmed by FMD or IMT or both. The degree of the endothelial dysfunction was correlated with the duration of the hypertension and the degree of the control. The patients from the group treated with Angiotensin II Receptor Antagonists had a significant lower value of PTX3 (0.61±0.20 ng/ml vs 0.98±1.07 ng/ml, p=0.01), thrombospondin 1 (7415.45±2836.22 ng/ml vs 7664.9±3585.6 ng/ml, p=0.217) and endoglin (4.87±0.76 ng/ml vs 6.38±2.2 ng/ml, p=0.0001)./h2

Conclusion: These new biochemical markers for endothelial dysfunction might be better and more useful markers for global cardiovascular risk factors. PTX3, thrombospondin-1 and endoglin could also be an easy tool to appreciate the degree of endothelial damage and also to appreciate the vascular protection done by different classes of antihypertensive medication, behind the controls of the blood pressure values.

Poster 10

Finding Exact Location of Wolff-Parkinson-White (WPW) Syndrome Accessory Pathway using ECG Characteristics

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Objective: Aim of our research is to improve present methods of WPW syndrome diagnosis and discover additional ECG criteria to increase specificity and sensitivity of the ECG test toward the accessory pathway location.

Introduction: Currently, Wolff-Parkinson-White (WPW) syndrome is defined as a congenital condition involving abnormal conductive cardiac tissue between the atria and the ventricles that provides a pathway for a reentrant tachycardia circuit. In people with WPW, whose heart rate can't be controlled with medications, ablation can improve symptoms and cure the abnormal arrhythmias. During the ablation the maximal excitation is created by using electrical impulses to find exact location of accessory pathway.

Materials and methods: This research has at least 100 patients in database who are diagnosed with WPW syndrome. Their pre and post ablation ECG are collected. In addition, after ablation, the exact location of accessory pathway is established and gathered ECG material is evaluated according to 10 criteria:

- Delta wave polarity
- Delta wave duration
- P-delta interval
- QRS polarity
- QRS width
- R wave amplitude
- T wave polarity
- RR interval
- QTc
- Axis (before & after)

Determined results are classified and connected to eight accepted location of accessory pathway (LL, LP, LPS, PS, RPS, RL, AS, AS (parahisian), MS). ECG features of those patients, who have the same location of accessory pathway, are compared. According this data we assess which criteria are specific to this precise location.

Benefits: This research will give us ability to diagnose accurate location of accessory pathway using ECG. Excitation of every possible location won't be required and the risk of cardiac tissue damage will be reduced. In addition, duration of the procedure will be shortened.

Result: Considering the fact that this research is in process we yet not have the final results. The research will be finished in one month

Poster 11

Diabetes Progression Rate Among Patients with Pre-diabetes: A Population Based Study

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Background: Twenty nine million (9%) of the US population have diabetes; the prevalence of pre-diabetes is even higher. A significant increased risk for cardiovascular disease (CVD) has been shown when pre-diabetes concurrently exists with other disorders such as hypertension. The prevalence of co-existent hypertension and pre-diabetes is not well known. It is imperative to identify pre-diabetics with hypertension so that interventions can be proactively initiated to optimize risk reduction. This retrospective cohort study determined the prevalence of pre-diabetes and co-existent hypertension in a population group in Midwestern United States and assessed the progression to diabetes.

Methods: Records of adult community dwelling patients 20 years or older empanelled in a primary care practice in 2005, who met criteria for pre-diabetes based on either hemoglobin A1c or fasting blood sugar, were reviewed. Concurrent diagnosis of hypertension using ICD-9 code was identified.

Results: Of 71,789 patients with at least one appropriate lab test (FBS or A1C), 16.0% (n=11,455) had pre-diabetes. Hypertension is a co-existent diagnosis in 44.9% (n=5,141) of patients. The rate per 1000 person years of diabetes progression at 1 and 5 years for those with hypertension are 53.7 and 52.7, respectively compared to 24.8 and 30.6 in those without a concurrent diagnosis of hypertension. This increased risk of 1- and 5-year progression to diabetes remained after adjustment for age, gender and race (rate ratio, 95% CI =2.08 (1.68, 2.57) and 1.69 (1.54, 1.86), respectively.

Conclusion: Almost half of patients with pre-diabetes have co-existent hypertension. Its presence is associated with increased rate of progression to diabetes at 1 and 5 years.

Poster 12

Ultrastructure of the Renal Nerves: Relation between Nerve Alterations and Diabetes and Hypertension

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Background: There is evidence that renal hemodynamics is impaired in experimental diabetes, associated with glomeruli structural alterations. Renal nerves were not yet investigated in experimental models of diabetes and the contribution of nerve alterations to the diabetic nephropathy that leads to development and or/maintenance of hypertension remains to be investigated. We investigated if ultrastructural morphometric parameters of the renal nerves are affected by short term and/or long term experimental diabetes.

Methods: Left renal nerves were evaluated 15 days or 12 weeks (N = 10 in each group) after induction of diabetes, (single injection of streptozotocin - STZ). Control rats (N = 10 in each group) were injected with vehicle (citrate buffer). Arterial pressure, together with the renal nerves activity, was recorded 15 days (short-term) or 12 weeks (long-term) after STZ injection. After the recordings, the renal nerves were dissected, prepared for light and transmission electron microscopy, and fibers morphometry were carried out with computer software.

Results: Mean arterial pressure (MAP) was significantly lower in both diabetic groups compared to controls. Heart rate (HR) was higher on acute and chronic controls compared diabetic groups. The major diabetic alteration on the renal nerves was a small myelinated fibers loss. The average morphometric parameters of the myelinated fibers were larger on chronic diabetic animals with a shift to the right on the distribution histograms of fiber diameter. These alterations began early, after 15 days of diabetes induction, associated with a severe mitochondrial damage.

Conclusions: The experimental diabetes caused small fiber loss in the renal nerves, probably due to the early mitochondrial damage. The kidney innervation is impaired in this diabetic model suggesting that alterations of the renal nerves may play a role in the development of the diabetic nephropathy that certainly contributes to the maintenance and/or worsening the hypertension damage to the kidneys.

Poster 13

Prevalence of Hypertension in Japanese Diabetes Mellitus with Pre-Hypertension and Normotension

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Introduction: Hypertension is often complicated with a diabetes mellitus. This study was done to estimate the progression rate from pre-hypertension and normotension to hypertension.

Method: A total 94 participants, aged 24 to 76 years at baseline (2010-2012) from Saitama Medical University Hospital were enrolled and followed up every month until 2015. The subjects' BP were measured at baseline, and were classified as follow: normotension (NT: SBP/DBP <120/80 mmHg), pre-HT (120/80-139/89 mmHg), and hypertension (HT : ＞140/90 mmHg or treated hypertension) . All the data are shown as mean ± SE. Student's *t*-test and regression analysis were performed for comparisons. A P-value less than 0.05 were considered to be statistically significant.

Result: The prevalence of HT from pre-HT and NT were 32.4 % at follow- up, these patients were designated as the progression group. The patients who did not progress to HTN were assigned to the non-progression group. The patients' pre SBP were 129 ± 2.6 mmHg in the progression group and 117 ± 2.6 mmHg in the non-progression group, with a statistically significant difference between the groups (P = 0.02). TG and urinary albumin has been adopted from the regression analysis.

Discussion: Diabetic nephropathy and lipid metabolism were thought to associate with the progression to HTN.

Poster 14

Low Serum Adiponectin Level is Associated with Metabolic Syndrome and is an Independent Marker of Arterial Stiffness in Hypertensive or Hypertensive Metabolic Syndrome Patients

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Background: To evaluate the relationship between serum adiponectin levels and arterial stiffness (AS) among hypertensive patients.

Methods: Fasting blood samples were obtained from 101 hypertensive patients. Brachial-ankle pulse wave velocity (baPWV) was measured in the right or left brachial artery to the ankle segments. Left or right baPWV values of > 14.0 m/s were used to define the high AS group. Metabolic syndrome (MetS) was defined using diagnostic criteria from the International Diabetes Federation.

Results: 63 hypertensive patients (62.4 %) had MetS. Serum adiponectin level ($P < 0.001$) was lower in hypertensive with MetS. 72 hypertensive patients (71.3%) were defined in high AS group. Diabetes ($P < 0.001$), MetS ($P < 0.001$), body weight ($P = 0.002$), waist circumference ($P < 0.001$), BMI ($P = 0.001$), systolic blood pressure ($P < 0.001$), diastolic blood pressure ($P = 0.012$), pulse pressure ($P = 0.019$), TG ($P = 0.001$), CRP ($P < 0.001$), insulin ($P = 0.027$), and HOMA-IR ($P = 0.026$) were higher, while HDL-C ($P = 0.012$), GFR ($P = 0.029$), and adiponectin level ($P < 0.001$) were lower in high AS group. In hypertensive MetS patients, TG ($P = 0.026$) and CRP ($P = 0.015$) were higher, while HDL-C ($P = 0.003$) and adiponectin level ($P < 0.001$) were lower in high AS group. Multivariate logistic regression analysis showed that adiponectin (OR: 0.929, 95% CI: 0.877 to 0.983, P=0.011) was the independent predictor of AS among the hypertension patients and adiponectin (OR: 0.888, 95% CI: 0.803 to 0.983, P=0.022) was still the independent predictor of AS among hypertensive MetS patients.

Conclusion: Adiponectin level is significantly reduced in hypertensive patients affected by MetS. Serum adiponectin level was inversely associated with AS among hypertensive or hypertensive MetS patients.

Poster 15

Telmisartan/S-Amlodipine Single-pill Combination Drug Safety and Efficacy Surveillance in Korean Patients with Hypertension

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Background: We performed safety and efficacy surveillance of Telmisartan/S-Amlodipine single-pill combination drug in Korean hypertension patients to find the unknown adverse effect in real word practice.

Methods: We performed this study from Mar. to Dec. 2014 in 103 local clinics in Korea. Hypertensive patients who took at least 1 dose of Telmisartan/S-Amlodipine single-pill were included in the study.

Patients with 1 time point data regarding adverse effects and blood pressure were included in the study.

Results: A total of 1225 patients with both safety and efficacy data were included in the analysis. Fifty percents of patients were male and mean age was 60.9±12.08 (age 28-92). Most patients had metabolic and nutrition disorders (88.41%) consisting of diabetes and dyslipidemia. Four point three percents of patients had cardiac and vascular disorders and 4.67% with nervous system disorders.

Mean duration of medication was 0.49±0.09 years. Total adverse events occurred in 1.27% (16patients): 7 dizziness (0.56%), 3 hypotension (0.24%) and 1 headache (0.08%). Drug related adverse events rate was 0.8% (10 patients) and no severe side effect was reported. Drug discontinuation rate was 1.36% (11patiens) owing to 0.88% of adverse effect, 0.24% of low efficacy, and 0.24% others. Blood pressure was significantly lowered from 144.7/86.8mmHg to 128/78.1mmHg after medication (difference 16.8 and 8.7mmHg, P0.001). Attainment rate to target blood pressure was 82.8% (1039/1225). The rate of SBP response (140mmHg or lowered 10mmHg) or DBP response (90mmHg or lowered 10mmHg) was 97.45%.

Conclusion: Telmisartan/S-Amlodipine single-pill combination drug is safe with drug-related adverse event rate 0.8% and have efficacy on lowering blood pressure.

Risk of Incident Hypertension According to Metabolic Health and Obesity: Definition of Metabolic Health does not Matter

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Metabolically healthy obese (MHO) phenotype refers to obese individuals with a favorable metabolic profile. Its prognostic value remains controversial and may partly depend on differences in defining methods. The aim of the present study was to investigate whether the MHO phenotype is associated with an increased risk of incident hypertension in a Korean population while adapting various definitions of metabolic health. The study population comprised 31033 Koreans without hypertension.

Participants were stratified by body mass index (cut-off value, 25.0 kg/m^2) and metabolic health state, using 4 different definitions: Adult Treatment Panel (ATP)-III criteria, Wildman criteria, Karelis criteria, and the homeostasis model assessment (HOMA) index. Over the median follow-up period of 35.0 months (range, 4.5–81.4 months), 4589 of the 31033 individuals (14.8%) developed incident hypertension. Compared with the metabolically healthy nonobese group, the MHO group showed increased risk of incident hypertension with multivariate-adjusted hazard ratios of 1.42 (95% confidence interval [CI], 1.30–1.55), 1.44 (95% CI 1.32–1.58), 1.41 (95% CI 1.32–1.58), and 1.33 (95% CI 1.22–1.45), when defined by ATP-III criteria, Wildman criteria, Karelis criteria, and HOMA index, respectively.

Metabolically unhealthy obese individuals were at the highest risk of incident hypertension. MHO subjects showed a substantially higher risk of incident hypertension regardless of the definition of metabolic health used. Thus, it is important to consider both metabolic health and obesity when evaluating the risk of hypertension.

Poster 17

Prehypertension Increases the Risk of Atherosclerosis in Type 2 Diabetes Mellitus

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Background and Aim: Hypertension is a risk factor of atherosclerotic diseases. However, the importance of prehypertension in patients with type 2 diabetes mellitus (T2DM) is still controversial. The aim of this study was to examine the association between prehypertension, hypertension and atherosclerosis in T2DM.

Subjects and Methods: We recruited 179 Japanese patients with T2DM, who never took any medication for diabetes, hypertension, dyslipidemia, or atherosclerosis (mean age; 56.0 years old, 67.6% men). Intima-media thickness (IMT) of common carotid artery was evaluated by high-resolution B-mode ultrasonography.

Results: Multiple regression analysis adjusted for age, duration of diabetes, body mass index, HbA1c, fasting C-peptide, triglyceride, HDL-cholesterol, LDL-cholesterol, and estimated glomerular filtration rate showed that systolic blood pressure (SBP), but not diastolic BP, was significantly and positively associated with maximum IMT (IMTmax), average IMT, and plaque score (β=0.28, p0.001; β=0.26, p=0.047; and β=0.25, p=0.006, respectively). ROC analysis showed that the cut-off value of SBP to detect atherosclerosis (mean of IMTmax; more than 1.8mm) was 133.5 (p=0.008), while DBP was not useful to detect it (p=0.433). Then, 53 were categorized as normotensive (SBP 119 mmHg), 79 were prehypertensive (SBP 120-139 mmHg), and 47 were hypertensive (140 mmHg). Multiple logistic regression analysis adjusted for the variables described above plus gender and smoking showed that prehypertension and hypertension were significantly associated with the increased risk of atherosclerosis (for prehypertension; odds ratio 3.45, 95%CI 1.11-10.76, p=0.033, and for hypertension; odds ratio 7.29, 95%CI 1.99-26.78, p=0.003).

Conclusion: These findings suggest that prehypertension categorized by SBP is an important risk factor of atherosclerosis independently of conventional risk factors of atherosclerotic diseases in T2DM.

Poster 18

Visceral Adiposity Index Predicts the Conversion of Metabolically Healthy Obesity to an Unhealthy Phenotype

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Some metabolically healthy obese (MHO) individuals convert to metabolically unhealthy obese (MUO) phenotype, and visceral adiposity is one of the suggested mechanisms behind the poor metabolic prognosis in these individuals. Visceral adipose index (VAI) is a novel mathematical model that estimates the visceral adiposity and visceral adipose dysfunction based on anthropometric and lipid profiles. We aimed to determine the association of VAI-estimated visceral adiposity with the MHO-to-MUO phenotypic conversion and to evaluate the predictive value of VAI in estimating unfavorable metabolic outcomes. The study population comprised 6,150 Koreans with the MHO phenotype. Participants were stratified by body mass index (cut-off value, 25.0 kg/m^2) and metabolic health state according to Adult Treatment Panel-III criteria at baseline and last follow-up examinations. VAI was calculated at baseline.

Over a median follow-up period of 37.0 months (range, 5.1–81.4 months), 25.0% of subjects converted to the MUO phenotype. An increase in VAI quartiles was associated with a greater proportion of subjects converting to the MUO phenotype, and also with increased odds ratios (ORs) for MHO-to-MUO conversion after multivariate logistic regression analysis. The optimal VAI cut off value was 1.28, with a sensitivity of 63.1% and a specificity of 60.3% (AUC, 0.654; 95% CI, 0.638-0.671, *P* 0.001). A MHO phenotype with a high VAI value is associated with poorer future metabolic outcomes. VAI-estimated visceral adiposity is well correlated with the prognosis of MHO subjects, and VAI has a good predictive value in determining the MHO-to-MUO conversion.

Antihypertensive Therapy in Women. The Role of Moxonidine, a Second Generation Centrally Acting Antihypertensive Agent

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Objective: Moxonidine is the newest, second‑generation, centrally acting antihypertensive agent with selective agonist activity at imidazoline I1 receptors. Since moxonidine has less adverse effects than other centrally acting sympatholytic drugs, it is used frequently in clinical practice, as monotherapy or in combination with other antihypertensive agents. Also, moxonidine is used in the treatment of obese, because moxonidine reduces leptin levels in plasma and weight in obese patients, mainly through the action on the SNS.

Design and Method: Our study enrolled 45 women, with grade 1 and 2 arterial hypertension, who were treated with moxonidine for 12 weeks, 15 hypertensive obese, 15 hypertensive overweight and 15 hypertensive with normal weight females.

Results: In obese women, there was a significant reduction of BMI (Body Mass Index) (p= 0.002),of SBP (p=0.000) and DBP (p=0.000) after treatment.

In overweight women, there was a significant reduction of BMI (p= 0.002), of SBP (p=0.000) and DBP (p=0.000) after treatment.

In normal weight patients, there was a significant reduction of BMI (p= 0.001), of SBP (p=0.001) and DBP (p=0.003) after treatment.

The same was observed, when the analysis concerned the total number of the females (p=0.000).

Conclusion: Women either obese or normal weight, seems to respond to antihypertensive treatment with moxonidine, with a significant reduction of SBP and DBP, which may reflect the great stimulation of the SNS in women before treatment and its contribution to the increase of blood pressure, as well as a more beneficial effect of moxonidine on BMI reduction in females.

Poster 20

The Efficacy and the Safety of Oral Tolvaptan in Patients with Heart Failure and Chronic Kidney Disease

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Background: Tolvaptan, a vasopressin V_2 receptor blocker, has a diuretic effect for patients with heart failure. In Japan, it has been applied to the excessive body fluid state, regardless of using the clinical doses of diuretics. However, there were few data concerning the effects of tolvaptan in patients with chronic kidney disease (CKD).

Method: We retrospectively analysed 21 patients with chronic heart failure (CHF) and CKD stage G3-5. Oral tolvaptan was co-administered with other diuretics in-use, every day. We compared several parameters including the urine volume, body weights, blood pressure, urine osmolalities, serum creatinine levels and the serum sodium concentrations before and after the treatments with tolvaptan. Furthermore, we examined the correlations between baseline data and the change of urinary volume and body weight.

Result: The urinary volume increased from 966 mL/day to 1253 mL/day (p0.001) and the body weight decreased significantly. (p0.001). However, the blood pressure did not change significantly. The alterations of urinary osmotic pressure and the FENa at 8 hours after tolvaptan administration were negatively correlated with the increments of the urine volume (r=-0.599, p=0.014 and r=-0.486, p=0.048, respectively). The basal urine volume, urinary osmolarity, and the alterations of urinary osmolarity at 4 hours after administration were correlated with the weight change (p=0.028, r=-0.48 and p=0.038, r=-0.479 and p=0.043, r=0.495, respectively). Concurrently, serum creatinine increased slightly from 4.22 mg/dL to 4.48 mg/dL. (p=0.017). Hyponatremia was improved dramatically to the normal value, and the augmentations of the sodium concentration were negatively associated with the basal sodium levels (p=0.01,r=-0.546).

Conclusion: Add on treatment with tolvaptan is partly useful to increase diuresis without a merger of the hypotension, even in patients of CHF with CKD stage G3-5. Tolvaptan also improved the hyponatremia seen in CKD patients. Tolvaptan treatment would be a good choice for treating chronic heart failure in patients with CKD stage G3-5.

The Association of Epicardial Fat and Non-Alcoholic Fatty Liver Disease with Metabolic Syndrome: From the CAESAR Study

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Background: Epicardial adipose tissue or non-alcoholic fatty liver disease (NAFLD) is one of putative risk factors for metabolic syndrome (MetS). There is no data assessing the association of MetS between epicardial fat and NAFLD.

Aims: The present study was performed to evaluate the comparison of metabolic syndrome between epicardial fat volume (EFV) and NAFLD in Korean adults.

Methods: EFV by computed tomography and fatty liver by ultrasonography were measured in 1,029 individuals(878 men, mean age, 45±0.1 years) among a total of 2,299 individuals enrolled in the CArdiometabolic risk, Epicardial fat, and Subclinical Atherosclerosis Registry (CAESAR).

Results: The median [interquartiles] of epicardial fat volume was 61.6[45.1, 82.9] cm3 and the prevalence of MetS (+) and NAFLD group was 22.7% and 44.3%, respectively. The EFV levels in MetS (+) group was significant higher than those in MetS (-) group (81.3[60.2, 102.7] cm3 versus 57.5[42.5, 76.5] cm3, p0.001): the prevalence of NAFLD in MetS (+) group was significantly higher than that in MetS (-) group (77.4% in MetS (+) group versus 34.6% in MetS (-) group, p0.001). In the multivariate logistic regression analysis after adjusting for variables with a univariate relationship (p0.20) except for 5 components of MetS definition, both logEFV and NAFLD had higher odds ratios (ORs) for the presence of MetS (OR [95% CI], 1.925[1.133, 3.270] for logEFV and 2.520[1.650, 3.849] for NAFLD). However, in the model including 5 components of MetS, Neither logEFV or NAFLD was significant (1.823[0.940, 3.536] for logEFV and 1.275[0.750, 2.160] for NAFLD.

Conclusion: This observational study showed that both EFV and NAFLD can be an independent factor for presence of MetS but the associations are different under the condition of various metabolic derangements, suggesting that both EFV and NAFLD could be a conditional factor interacting with traditional risk components to influence the presence of metabolic syndrome.

Could Short Message Service Be Used for Patients with Arterial Hypertension Follow-Up: The Results of Pilot Study

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Purpose: To assess if short message service (SMS) could be used for patients with arterial hypertension follow-up

Methods: There was conducted the open prospective single-arm study involved 30 patients, who have been receiving SMS with medical-related information. SMS contained information about healthy lifestyle, patients' disease and reminders for blood pressure measurement and drug intake. Every patient could finish participation in that program by sending SMS with text "STOP" whenever he/she likes.

Results: The duration of study was 6 month and by this date there was5 patients (16,7%) who was still active. The rest of them had been stopped their participation in study earlier. The median duration of participation was 48.9 ± 5.2 days. The average number of days before stopping the program was 19.9 ± 4.1 days. The average adherence to the therapy was 52 ± 4%, the average adherence to the blood pressure measurement was 42.5 ± 3.4%.

Conclusion: This study showed that there could be potential positive effect in SMS dialog with patients with arterial hypertension, but average time of patients activity in those programs are limited. Potential effectiveness seems to be higher in short-term follow-up programs (from 14 to 30 days).

Poster 23

The Role of Adipokines in Obesity-Related Hypertension

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Background: Obesity is a known to be a risk factor for hypertension (HTN), while underlying pathways still need to be investigated. Adipokines may play a role being implicated in the regulation of vascular endothelial and smooth muscle cells functions, facilitation of organ damage.

Purpose: The aim of the present study was to compare the profile of serum adipokines and their associations with blood pressure levels (BP), endothelial function and arterial stiffness in obese and normal body weight hypertensive patients and healthy controls.

Methods: We examined 30 hypertensive obese patients (BMI more than 30 kg/m2), age and sex-matched 18 normal-weight hypertensive patients and 15 healthy controls. Ambulatory blood pressure monitoring (ABPM, SpaceLabs 90207), applanation tonometry (SphygmoCor, Artcor Medical) with calculation of central aortic pressure, pulse wave velocity (PWV) and augmentation index (AI) were performed in all subjects. Reactive hyperemia index (RHI) was assessed by EndoPAT (Itamar Medicals) device. Adipokine levels (adiponectin, leptin, resistin, visfatin, adipsin) were determined by using Bio Plex Pro Human assays.

Results: Adiponectin level was significantly higher in healthy controls and normal-weight hypertensive patients compared to obese subjects (4.3 +/- 1.7, 4.0 +/- 2.3 and 3.3 +/- 1.9 pg/ml, respectively; ANOVA, p=0.049), there were no differences in other adipokines levels between the groups. Vascular stiffness and endothelial function were within normal values, though PWV was higher and RHI was lower in hypertensive groups compared to healthy controls (8.7 +/-0.3 versus 6.8 +/- 1.6 m/s; p=0.02 and 1.8 +/- 0.08 versus 2,6 +/- 0.9; p=0.02, respectively). However, only in obese subgroup some adipokines were associated with diastolic BP levels - adipsin with "office" diastolic BP (r=0.427, p=0.048), resistin grades with "office" (r=0.488, p=0.025) and central (r=0.456, p=0.038) diastolic BP and also visfatin levels with central diastolic BP (r=0.451, p=0.03), as well as RHI was associated with leptin levels (r=-0.5, p=0.001), PVW with leptin (r=0.5, p=0.001) and resistin (r=0.5, p=0.001) levels.

Conclusions: Obese hypertensive patients are characterized by decreased adiponectin levels and both peripheral and central diastolic BP and vascular damage appear to be associated with adipokines levels.

Prevalence of Subclinical Organ Damage in Russian Population: Who Have More Often?

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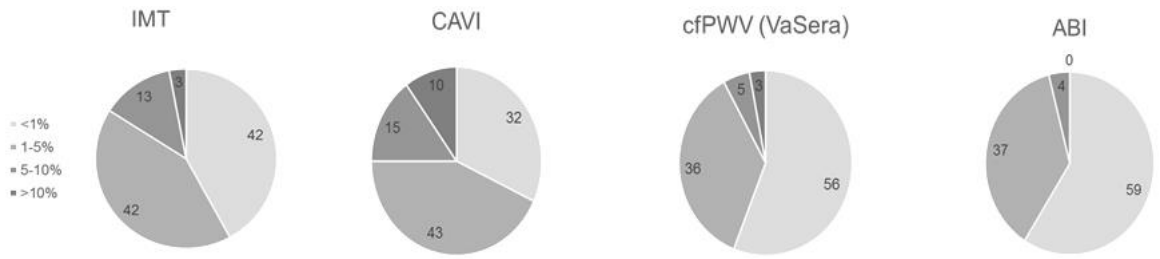
Objective: Subclinical organ damage detection is one of valuable tool for précising of cardiovascular risk in non-high risk patients. Prevalence of subclinical vascular damage in hypertensive patients is well investigated but data on population level are still poor. The aim of our study was to estimate the prevalence of subclinical vascular damage in Russian population with different level of cardiovascular risk according to SCORE.

Design and Methods: 1382 apparently healthy participants aged 25-65 years were randomly selected from Saint-Petersburg inhabitants (a sample form ESSE-RF study). All participants signed informed consent and filled in the questionnaire regarding risk factors, concomitant diseases and therapy. Fasting lipids, glucose (Abbott Architect 8000 (USA)) and BP measurement were performed. All patients were divided into low (≤1%), intermediate (1-5%), high (5-10%) and very high (>10%) cardiovascular risk groups according to SCORE. 191 patients were excluded from the risk estimation due to presence of cardiovascular complications (MI, stroke, CHD, CHF). Cardio-ankle vascular index (CAVI), carotid-femoral pulse wave velocity (cfPWV) and ankle brachial index (ABI) were measured by VaSera VS-1500 (Fukuda, Japan). Measurement of intima-media thickness (IMT) was performed by My Sono U6 (Samsung, Korea). The subclinical organ damage was detected, if cfPWV was >10m/s, CAVI≥9,0, ABI≤0,9, IMT>0,9 mm. Statistical analysis was performed using SPSS Statistics 20.

Results: 731 (60,6%) patients had low risk, 365 (31%) - intermediate risk, 67 (6,2%) high and 28 (2,2%) patients very high cardiovascular risk.Picture 1 Prevalence of subclinical organ damage in different risk groups according to SCORE



Conclusion: The majority of patients has low and intermediate risk as is usual on population level. The highest prevalence of subclinical vascular damage was revealed in non-high risk patients due to their outnumbering. Subclinical vascular investigation on population level can facilitate the distinguishing of people who is needed additional medical attention and treatment.

Poster 25

BMP9 Regulates Differentiation of EPC to EC and Enhances Ischemic Neoangiogenesis through ALK1 Signaling

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Modulating endothelial progenitor cells (EPCs) are essential for therapeutic angiogenesis, and diverse clinical trials using EPCs are ongoing. However, the identification of environmental conditions and development of optimal methods are required to accelerate EPC-driven vasculogenesis.

We evaluated gene expression profiles of cord blood-derived EPCs and endothelial cells (ECs) to identify the key factors in EPC→EC differentiation, and to show that transforming growth factor β (TGFβ) family members contribute to EPC differentiation. The expression levels of activin receptor-like kinase (ALK1) and its high-affinity ligand, bone morphogenetic protein 9 (BMP9), were markedly changed in EPC→EC differentiation. Interestingly, BMP9 induced EPC→EC differentiation and EPC incorporation into vessel-like structures by acting on ALK1 expressed on EPCs *in vitro*. BMP9 also induced neovascularization in mice with hind limb ischemia by increasing vessel formation and the incorporation of EPCs into vessels. Conversely, neovascularization was impaired when ALK1 signaling was blocked. Further, EPCs exposed to either short- or long-term BMP9 stimulation demonstrated these functions in EPC-mediated neovascularization.

Collectively, our results indicated that BMP9/ALK1 augmented vasculogenesis and angiogenesis, and thereby enhanced neovascularization. Thus, we suggest that BMP9/ALK1 may improve the efficacy of EPC-based therapies for treating ischemic diseases.

Poster 26

Gender Differences in the Association between Serum γ-Glutamyltransferase and Blood Pressure Change: A Prospective Community-Based Cohort Study

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We evaluated the gender differences in the relation of baseline serum γ-glutamyltransferase (GGT) levels to blood pressure (BP) change during 4 yr. 4,025 normotensive subjects (1,945 men and 2,080 women) who aged 40-69 yr at baseline participated in the Ansung-Ansan cohort of the Korean Genome Epidemiology Study were included. The associations of GGT with baseline BP or 4-yr change of BP were evaluated. GGT levels were associated with systolic blood pressure (SBP) and diastolic blood pressure (DBP) at baseline after adjusting for age, body mass index (BMI), HDL-cholesterol, triglyceride, C-reactive protein (CRP), current smoking status and alcohol intake (SBP, β = 1.28, P 0.001; DBP, β = 1.41, P 0.001). GGT levels were also associated with 4-yr change in BP after adjusting for age, BMI, HDL-cholesterol, triglyceride, CRP, current smoking status, alcohol intake and SBP (SBP, β = 1.08, P = 0.001; DBP, β = 0.64, P = 0.003). This association was statistically significant in men (SBP, β = 1.82, P 0.001; DBP, β = 1.05, P = 0.001), but not in women (SBP, β = 0.38, P = 0.466; DBP, β = -0.37, P = 0.304). Remarkably, this association between GGT and BP was significant in men at 40-49 yr of age. In summary, we found positive associations between GGT levels at baseline and the change of BP. The relation of GGT level and the change of BP was only significant in men, not in women, which warrants further studies to elucidate the biologic mechanisms.

Poster 27

Premature Aging of Immune System in Children with Primary Hypertension - Preliminary Results

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[2]*Microbiology & Immunology, The Children's Memorial Health Institute, Poland*
[3]*Immunology, Medical University, Poland*

A lot of data indicates that immune system plays a role in pathogenesis of primary hypertension (PH).

Immune response profiles in the course of hypertension seems to be associated with accelerated maturation and senescence of immune system.

The aim of the study was to find out if blood pressure status and hypertensive target organ damage is associated with expression of lymphocyte thymic marker (CD31) and certain other receptors, related to lymphocyte maturity and senescence. Patients & methods: 6 normotensive, healthy children, 16 children with white coat hypertension and 11 children with PH, in mean age of 15,3 ±1,8 yrs were included to the study. Diagnosis of PH was established after thorough diagnostic evaluation and confirmed by 24h ABPM. The expression of maturation markers on CD4 and CD8 T cell subset were evaluated by means of flow cytometry technique.

The results were expressed in terms of the percentage of positive cells (%) and fluorescence intensity (FI). Hypertensive target organ damage was expressed as increased carotid intima-media thickness (cIMT), carotid wall cross sectional area (WCSA), left ventricular mass index (LVMI), carotid-femoral pulse wave velocity (PWV). Results: There were no differences between normotensive controls, white coat hypertensives and hypertensive children regarding CD4+ and CD8+ T cell subsets. However, patients with white coat hypertension and PH tended to have decreased proportion of CD31 bearing CD4+ T cells (statistically non-significant). There were no correlations between T cells subsets and LVMI, PWV, cIMT, metabolic and anthropometrical variables. However, there was negative correlation between WCSA expressed both in absolute and as standard deviation score with CD4CD31+ Tcell numbers (r = -0,435; p = 0,011; r-0,410; p = 0,018, respectively).

Conclusions: Negative correlation between subclinical arterial injury and CD31 bearing CD4+ T cells (early thymic emigrants) suggest association between T cells maturity and arterial injury.

The Apical and Lateral Wall Types of Left Ventricular Hypertrophy at Patients with Certain Manifestations of a Metabolic Syndrome, Features of Clinical Picture and Diagnostics

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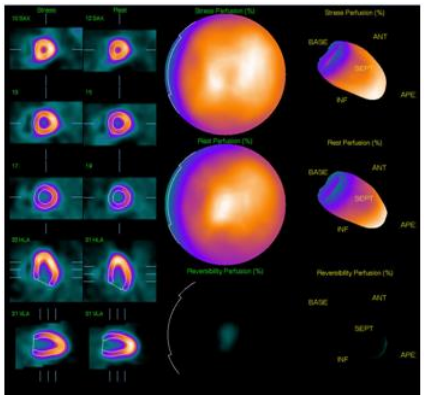
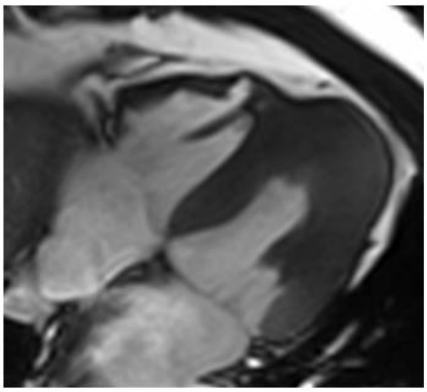
The risk of development of cardiac events depend on type of remodeling of the LV so the aim of our research is to determine asymmetrical type of left ventricular (LV) hypertrophy on the background of a long current of manifestations of components of metabolic syndrome.

During two years observation the group of 20 patients of Republican Clinical Hospital Kazan with the III degree of essential hypertension, the reduced tolerance to glucose, visceral type of obesity and congestive heart failure was formed. To all patients besides an ESG and ultrasound researches the SPECT on the Philips Bright View chamber was performed. For visualization of apex of LV MRI using Siemens Magnetom Verio 3T tomography was carried out.

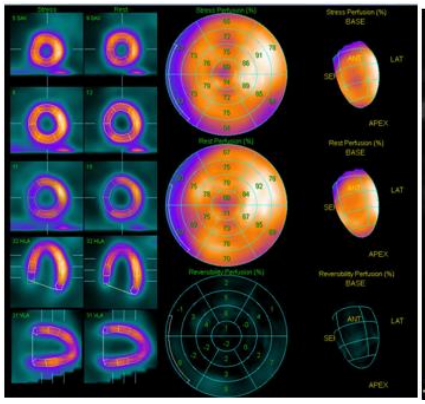
Conducted researches showed negative T in I avL V2-V6 assignments, left deviations of an electric axis, increase in mass of LV more than 200 g, 45 % injection fraction, lack of a local contractility. Defining to forming groups was carrying out of SPECT at rest and coupled with a load submitted by a bicycle exercise. 2 groups were formed:

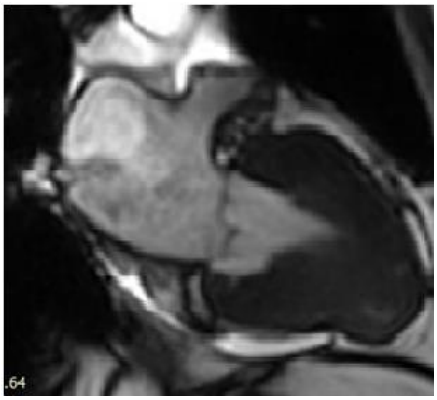
1st with mainly apex hypertrophy of LV.





2 with mainly lateral wall hypertrophy.





Asymmetric accumulation with relative redistribution in area according to apical and side segments and decrease in perfusion of medial and the basal, lack of reliable signs of stress - induced myocardium ischemia was noted. MRI thickening of basal part of septum apex lateral wall of LV were differ but more than 15 mm.

The most frequent but not the only type of hypertrophy is the concentric which is followed by hypertrophy of all free wall of the LV. SPECT initially carried out to an exception of ischemia, however allowed to assume other type of remodeling and allowed to carry out MRI to determine the true thickness of a myocardium in causal segments.

Poster 29

Estimated Glomerular Filtration Rate, (Micro) Albuminuria and Cognitive Performance – The Maastricht Study

Remy Martens[1,2], Jeroen Kooman[1,2], Coen Stehouwer[3,4], Pieter Dagnelie[4,5,6], Carla van der Kallen[3,4], Annemarie Koster[5,7], Abraham Kroon[3,4], Karel Leunissen[1], Giel Nijpels[8,9], Frank van der Sande[1], Nicolaas Schaper[3,4], Simone Sep[3,4], Frans Verhey[10,11], Martin van Boxtel[10,11], Miranda Schram[3,4], Ronald Henry[3,4]

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Background: In older individuals reduced estimated glomerular filtration rate (eGFR) and (micro) albuminuria have been associated with worse cognitive performance. Data on the association between kidney function and cognitive performance in middle-aged individuals are scarce. We examined associations of eGFR and (micro) albuminuria with several domains of cognitive performance in a population-based cohort of middle-aged and older individuals.

Methods: Memory function, information processing speed and, executive function and attention were assessed in The Maastricht Study (n=2989). GFR was estimated by the CKD-EPI creatinine-cystatin C equation ($eGFR_{crcys}$). Urinary albumin excretion (UAE) was based upon two 24h urine collections. We examined cross-sectional associations of $eGFR_{crcys}$ and (micro) albuminuria with cognitive performance with linear regression analyses. These analyses were adjusted for demographics, cardiovascular disease and lifestyle factors. Additionally, we tested whether these associations were mutually independent and for any interaction with age.

Results: Average age was 59.6 ±8.2 years, 51.1% were men and 26.5% had type 2 diabetes (design). UAE was crcys was 88.4±14.6 ml/min/1.73m^2. After adjustment, $eGFR_{crcys}$ was not associated with any of the domains of cognitive performance. Interaction analyses, however, suggested that the association between $eGFR_{crcys}$ and cognitive performance was stronger in older individuals ($P_{(interaction)} < 0.05$), e.g. for memory function, the beta(95%CI) was 0.009(-0.025; 0.043) for 50-year-old individuals and -0.031(-0.063; 0.001) for 70-year-old individuals after adjustment.

Conclusions/Discussion: (Micro) albuminuria was independently associated with lower information processing speed and may thereby be a marker for cognitive decline. Mildly reduced $eGFR_{crcys}$ was not associated with cognitive performance until older age.

Poster 30

(Micro) Albuminuria but Not Reduced Estimated Glomerular Filtration Rate is Associated with Depression – The Maastricht Study

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Background: About 25% of individuals with chronic kidney disease (CKD) suffer from depression. Data on the association of the components of CKD, i.e. reduced estimated glomerular filtration rate (eGFR) and (or) (micro) albuminuria, with depression are scarce. The former may lead to accumulation of neurotoxins and (or) cerebrovascular disease whereas the latter may be a marker of generalized endothelial dysfunction. We examined associations of eGFR and (micro) albuminuria with depression in a population-based cohort study.

Methods: Depression was assessed with the Mini International Neuropsychiatric Interview (MINI) and the Patient Health Questionnaire-9 (PHQ-9) in 3083 and 2872 participants of The Maastricht Study, respectively. eGFR was estimated with the CKD-EPI creatinine-cystatin C equation. (Micro) albuminuria was based upon the average of two 24h urine collections. With the use of logistic regression analyses we assessed the cross-sectional associations of eGFR and (micro) albuminuria with depression. These analyses were adjusted for age, sex, glucose metabolism status, and cardiovascular disease risk factors.

Results: Average age was 59.8±8.2 years, 51.8% were men, 27.4% had type 2 diabetes (by design) and 5.4% had minor/major depressive disorder based upon the MINI. Albumin excretion was 2. eGFR was not associated with minor/major depressive disorder. Results were similar when the analyses were repeated based upon the presence of clinically relevant depressive symptoms (PHQ-9 ≥10).

Conclusions/Discussion: (Micro) albuminuria but not mildly to moderately reduced eGFR was associated with depression. These results may be explained by a role of endothelial dysfunction in the pathogenesis of both (micro) albuminuria and depression.

Poster 31

Study of Level of Knowledge that Hypertensive Patients have about the Effect of Nutrition on their Condition in a Public Health Center of Jalisco, Mexico

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Background: The current prevalence of hypertension in Mexico is 31.6 %, the highest worldwide. The non-pharmacological treatment of hypertension is extremely important and has been shown that an adjustment in the consumption of salt, fat and physical exercise contributes significantly to better control of hypertension. In the 2012 National Health Survey in Mexico (ENSANUT 2012), it has been seen that in most of these patients despite the supply of drugs, do not have good progress; obviously not due to the quality of the drug, but patient care. This leads us to speculate that the root of the problem is the lack of training the patient on the necessary steps to take in their daily life to control their disease. Our goal is to identify the level of awareness among hypertensive patients on the importance of diet in their condition.

Methods: A descriptive survey was conducted to hypertensive patients. This includes information on highest level of education, media used by the patient, knowledge of proper nutrition and counseling by health personnel.

Results: 34 patients diagnosed with hypertension. Men were 16 (47.05 %) and 18 women (52.94 %). 28 studied primary school (82.35 %), 6 high school (17.64%) and no one attended to a preparatory or college. Patients have a knowledge level average enough (16/23 hits) compared to foods should not consume. 44.1% of them checked their labels, with poor ability to recognize the ingredients that should be avoided (2/5 hits). 97 % have received training in their diet by staff which is assigned health.

Conclusions: It was identified a basic level of knowledge of the foods that should avoid. 44% of patients revise their labels, but they don't know how to interpret them. Most have received at least one dietary counseling by health staff, but this is not very specific and viable. To achieve optimum control, the patient needs to receive better and as much information about their diet in a personalized way.

Poster 32

Gender Difference in Behavioral Factors for Metabolic Syndrome and its Preliminary Condition in the General Population: The Watari study

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Background: It has been reported that prevalence of metabolic syndrome (Mets) shows large gender difference across countries. In Japan it has been demonstrated that Mets is more prevalent in men than in women but it remains unclear if such gender difference is attributable to behavioral factors.

Subjects and Methods: We studied 3166 inhabitants of Watari (mean age 62±11 yrs, 40.4% men) who participated in a health check-up. Waist circumference, sitting blood pressures, fasting blood samples were examined in all participants. Unhealthy dietary behaviors (late dinner, snacks after dinner, fast eating, skipping breakfast, smoking, heavy drinking, lack of regular exercise) were evaluated by standard questionnaire. Mets was diagnosed by central obesity as assessed by waist circumference plus 2 or more of the following risks; high blood pressures, hyperglycemia and hypertriglycemia and/or hypo-high density lipoproteinemia according to Japanese criteria. Central obesity plus one of the cardiometabolic risks was considered as preliminary condition of Mets (PreMets).

Results: Men showed higher prevalence of Mets (23.3 vs.8.7 %, p0.001) and PreMets (21.2 vs. 10.2 %, p0.001) compared with women. Age adjusted logistic regression analysis has shown that fast eating and lack of regular exercise was associated higher odds ratio for Mets and PreMets in men (odds ratio 1.69:1.30-2.21 and 1.30:1.03-1.63) and women (1.69:1.29-2.22 and 1.45:1.12-1.86). Heavy drinking was associated with significantly higher odds ratio for Mets and PreMets in men (1.79:1.28-2.51). Frequency of heavy drinking and fast eating was higher in men than in women (13.8 vs. 7.4%, p

Conclusion: Prevalence of Mets and PreMets was related to some behavioral factors in the Japanese general population. More frequent Mets and PreMets seen in men than in women may be explained in part by dietary factors.

Poster 33

The Efficiency of Renal Denervation in Off-Label Cases

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Aim: to show the feasibility and efficiency of renal sympathetic denervation (RSD) in patients with modified renal arteries.

Methods and Results: We did RSD in 7 patients with resistant hypertension and modified renal arteries: 3 patients with small renal artery

Conclusions: Our results show the feasibility and efficiency of RSD in patients with modified renal arteries, but it still requires experience and further study.

Poster 34

Feasibility of Regression of Hypertension Using Contemporary Antihypertensive Medications

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Background: We have reported that transient treatment of genetically hypertensive rats with high-dose angiotensin receptor blocker (ARB) causes regression of established hypertension. In this study, we investigated whether treatment with an ARB, candesartan or Calcium Channel Blocker (CCB), nifedipine controlled-release (CR) resulted in a sustained regression of hypertension in human.

Methods: Patients aged 30 to 59 years with untreated stage 1 essential hypertension and family history of hypertension were treated with the antihypertensive agents, ARB, candesartan or CCB, nifedipine CR. After 1 year of treatment phase (phase 1), the medications were tapered and discontinued (phase 2). During phase 2, home and office blood pressures were monitored for another year to assess posttreatment reoccurrence of stage 1 hypertension.

Results: In phase 1, after 1 year of treatment, a similary substantial blood pressure decrease was seen in the candesartan and nifedipine groups.

In phase 2, there was a substantial reoccurrence of hypertension and at the study end, only one patient in the candesartan group was able to continue without antihypertensive medication.

A Kaplan Meier analysis revealed a significant delay of reoccurrence of hypertension in the candesartan group.

Conclusion: One year of treatment with candesartan or nifedipine CR was not associated with marked regression of hypertension in humans at the standard dose used in this trial.

However, withdrawal of candesartan was associated with a slightly longer delay before restarting medications.

Further studies with larger doses of candesartan given over a longer time are required to determine whether such a regimen may induce sustainable and clinically relevant reversal of hypertension and alteration in its natural history.

Poster 35

Changes in Intima Media Thickness, Ankle Brachial Index and Flow Mediated Dilation in Prehypertensive Individuals

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Background: Prehypertension (PH) is a state being on the frontier between the physiological referent arterial pressure values and pathological ones. The opinion concerned with its treatment is contradictory. Vascular alteration is an object of interest.

Material and Methods: Intima Media Thickness (IMT), Ankle Brachial Index (ABI) and Flow Mediated Dilation (FMD) indices were examined in 103 individuals with PH and 45 normotensives. Anthropometric and clinical chemical methods were also applied. The statistical processing was carried out by MS Excel 2000 and SPSS 11.0.

Results: The pre hypertensives' metabolic profile was unfavorable; they are overweight and have bigger waist size, reflecting in higher cardiovascular risk. The percentage of FMD is reduced as an expression of endothelial function. Structural vascular alterations are not registered – ITM and ABI values are of no significant difference in the two followed up groups.

Conclusion: The therapeutic approach in prehypertensives should be directed to reestablishment of the endothelial function.

Poster 36

Role of Prolyl Hydroxyl Binding Proteins (PHD) and Contribution of MYD88 to Nrf2/NFkB Pathways to Nitric Oxide Deficiency-Induced Hypertensive Renal Injury

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Background: Oxidative stress and associated inflammation, features of hypertension and kidney disease, involve many mediators. Nrf2, a transcription factor that increases the expression of several antioxidant enzymes, is the primary cellular defense against oxidative stress. MYD88, an adaptor protein has been implicated in macrophage inflammatory response leading to NFkB activation. PHD, the major oxygen sensor in hypoxia has been shown to be intricately linked to NO. This study evaluated the role played by PHD and its association with Nrf2, MYD88 and NFKB in hypertension-induced renal injury.

Methods: Adult rats were placed on LNNA, inhibitor of NO synthase and/or DMOG, an inhibitor of PHD. Blood pressure (BP) was determined on Days 1, 4, 7, and 14 and 24-hour urine collected for protein excretion. Kidneys were collected to determine expression of PHD1 and PHD2, Nrf2, p65, and MYD88 in nuclear fractions. KIM-1 expression, index of tubular damage, was assessed in whole kidneys. Plasma TNFa, IL-6, and IL-1a levels, markers of inflammation, were measured by ELISA. Generation of oxidant species in the kidney was evaluated by xanthine (3,5,10 mg/kg)-induced generation of H_2O_2.

Results: LNNA increased BP (35%, $P<0.05$), kidney weight (15%, $P<0.05$), protein excretion (3.5-fold, $P<0.05$) and KIM-1 expression (3.8-fold, $P<0.05$). DMOG blunted the increases. LNNA also reduced PHD2 (20%) but not PHD1 expression or Nrf2 expression. Accompanying these were increased nuclear expression of p65 (34%, $P<0.05$) and MYD88 (32%, $P<0.05$) and increased TNFa, IL-6, and IL-1a ($P<0.05$) in LNNA-treated rats. DMOG blunted these effects. Renal production of H_2O_2 by xanthine was greater ($P<0.05$) in LNNA-treated rats.

Conclusions/Discussion: These data suggest a role for PHD2 in hypertensive renal injury and inflammation induced by NO deficiency. The accompanying changes in MYD88/p65 expression and cytokine production confirm the ongoing inflammatory process. However, despite the increase in production of reactive oxygen species, Nrf2 does not play a part in NO deficiency-induced cardiovascular effect.

Poster 37

Cardiovascular Complications in Children with Type I Diabetes. A Proteomic Analysis

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Hyperglycemia, insulin resistance, hyperinsulinemia and hyperlipidemia, which represent important pathophysiological components of diabetes mellitus, result in endothelial and vascular dysfunction through complex underlying mechanisms from the onset of the disease. For the purposes of this study, salivary proteomic profile of type 1 diabetic children with poor metabolic control (G1) (HbA1c8%) was analysed and compared with that of well- controlled patients (G2) (HbA1c≤8%) and healthy subjects (Ctrl), age and sex matched accordingly. Whole unstimulated saliva samples were used for the purpose of the study. Proteomic analysis included 2D LC-MS/MS followed by MRM for validation of the differentially expressed proteins. 2032 proteins were identified across the groups, 32 were differentially expressed between G1-Ctrl, 36 between G2-Ctrl and 68 between G1-G2. The findings of this study indicate that salivary proteomes of type 1 diabetic young patients differ among groups depending on the level of metabolic control. Proteomic profile of well regulated patients was similar to this of healthy controls. Biological pathways related to diabetic complications, such as acute phase response signalling, cardiovascular damage and immunodeficiency mechanisms, appear to be affected in patients with poor control of glucose levels. The study revealed that among differentially expressed proteins were PLG, SERPING1, SERPINC1, APOA2, FGB, A2M, which are related to endothelial dysfunction, coagulation processes and pro-atherogenic alteration mechanisms.

Poster 38

HDL Subfraction: Influence on Framingham Risk Score and Relation with Lipd Profile and Body Composition

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Introduction: Cardiovascular disease is the leading cause of morbidity and mortality throughout the world. It is widely recognized that increasing the plasma concentration of high density lipoprotein reduces cardiovascular risk. However, despite the unquestionable role of these, monitoring lipoprotein subfractions can provide an additional cardiovascular risk estimative. The objective of the Framingham Heart Study was to identify the common factors or characteristics that contribute to CVD by following its development over a long period of time in a large group of participants. The aim of this study was to analyze if HDL subfractions has influence on Framingham Risk Score (FRS), body composition and lipid profile.

Methodology: This is a cross-sectional study with 287 adults, both sexes, between 30 and 74 years old. Fasting blood sample was collected for biochemical analysis. Using Lipoprint System® (Quantimetrix Corporation) HDL subfractions were obtained. Statistical analyzes were performed with SPSS 20.0 (p value < 0.05).

Results: The mean age was 53 years old, more than 60% were female. Linear regression models demonstrated that BMI, WC, LDL-c, APOB and HDL subfractions had influence on FRS. Featured for HDL_{LARGE} particle that contributed with 55% on FRS variability and predicted that each 1% increase on HDL_{LARGE} decrease 11.4% on FRS (Table 1).

Linear Trend Analysis showed differences between groups stratified by HDL_{LARGE} tertiles. It means that while HDL size increase the FRS (%) decrease (Figure 1). Furthermore, the analysis also showed that as HDL particle size increase the BMI, WC, TC, TAG and APOB decrease while HDL-c, APOAI and LDL size increase (Table 2).

Conclusion: HDL subfractions had influence on cardiovascular risk and larger particles have been associated with lower risk. Our results reinforce the positive role of HDL_{LARGE} on cardiovascular risk because their influence to reduce FRS and their association to improve lipid profile and body composition.

Poster 39

Cardiovascular and Catecholamine Responses during Stress Test in Young Men with Hypertension and/or Obesity

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Obesity is associated with higher risk of hypertension (HT), diabetes, and cardiovascular diseases. The mechanisms by which obesity raises blood pressure are not completely understood. The present study was aimed to investigate sympathoadrenal responses to a mental stress test and to orthostasis in young patients with hypertension grade I with and without obesity. The main hypothesis to be verified was that the presence of obesity in patients with diagnosed hypertension has an additive effect on cardiovascular and catecholamine responses to a mental stress task. The participants were young male subjects, 8 with hypertension grade I, with BMI≤25kg/m^2 (HT), 10 with hypertension grade I, with BMI≥30kg/m^2 (HT OB), 14 normotensive subjects with BMI≥30kg/m^2 (OB), and13 healthy controls with BMI≤25kg/m^2 (C),. The Stroop word-color test and orthostasis were used as the stress model. ECG was recorded continuously to evaluate heart rate variability (HRV). Blood pressure (BP) and catecholamine concentrations were measured at baseline, and during the stress tests. Patients with HT demonstrated increased adrenaline concentrations at baseline and during the mental stress test as well as enhanced stress-induced noradrenaline release compared to that in healthy controls. A higher baseline systolic BP was observed in the group of obese otherwise healthy subjects than in lean controls. Obese subjects exhibited a lower mental stress induced increase of systolic BP compared to lean individuals. The changes in systolic BP negatively correlated with BMI. The blood pressure and catecholamines response to orthostasis were comparable in all groups. The present data demonstrate higher sympathoadrenal activity manifested by augmented noradrenaline response to mental stress in hypertension grade I. Lower mental stress induced increase of systolic BP is in discrepancy with the prevailing opinion of increased stress reactivity in obesity. Combination of obesity and hypertension does not produce additional increase in sympathetic activity.

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Poster 40

Hypertension and Type 2 Diabetes Mellitus and Lapse of Diagnosis for End-Stage Kidney Disease in 18 Patients from a Hospital of Puerto Vallarta, Jalisco. México

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Background: End-Stage Kidney Disease is directly related to hypertension, diabetes and dyslipidemia, which is today diseases that have reached epidemic proportions in our country.

Methods: We conducted an analytical, observational, cross-sectional, retrospective study based on individuals, involving 18 patients assigned to the ISSSTE Hospital located in Puerto Vallarta, Jalisco. México, diagnosed with End-Stage Kidney Disease, in which we seek to establish an approximate time frame for the diagnosis of End-Stage Kidney Disease in patients with a previous diagnosis of Systemic Hypertension, Diabetes Mellitus Type 2 and both associated. Statistical analysis was performed using the Excel Analysis ToolPak for Microsoft Office Excel 2013.

Results: Data were collected from 18 patients diagnosed with End Stage Kidney Disease, of which only 15 patient`s (83.33%) were analyzed, otherwise 3 patient`s (16.66%) were excluded, 2 of them by presenting a diagnosis of ESKD simultaneously to Type 2 Diabetes or Systemic Hypertension, and the remaining patient did not present any comorbidity when establishing the diagnosis of ESKD.

Of the selected patients it was found that the category who took a shorter time to have as diagnosed ESKD were patients with Hypertension as unique comorbidity, with an average of 5.6 years, while the category of type 2 diabetes mellitus and associated hypertension, had an average of 9 years, and finally patients with type 2 diabetes mellitus only, showed an average of 20 years of evolution before they make a diagnosis of ESRD.

Conclusions/Discussion: The results show a direct causal link between type 2 diabetes mellitus and hypertension, with the onset of chronic kidney failure, this time depending on the evolution of the disease. Being patients with hypertension as the only comorbidity those with the shortest period to develop terminal chronic renal impairment compared to patients with diabetes mellitus as one comorbidity, who show a slow and progressive deterioration, perhaps associated with various factors, a major by inhibiting the renin-angiotensin system.

Poster 41

Clinical Features of 238 Patients Undergoing Ambulatory Blood Pressure Monitoring in Primary Care: Is it Under Enough Control?

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Objective: To describe clinical features and results of the 24-hours Ambulatory Blood Pressure Monitoring (ABPM) in Primary Health Care (PHC) from 2009 till June 2015.

Design and Methods: This is a retrospective study of results from 238 ABPM made in Montclar, Medical Centre of Primary Care in Sant Boi de Llobregat, (Barcelona, Spain) during the years 2009 to 2015, in patients with confirmed or suspected diagnosis of hypertension, with a device validated for the above mentioned study. Of 238 patients, 47 % were men and 52 % women. Risk factors and mean pressures of 24-hours period were recorded. The CVR were calculated according Regicor's guides, and were defined as low (0-4,99), medium (5-9,99) and high (=>10). Circadian patterns were defined based on the decrease in blood pressure (BP) during sleep: extreme dipper (> 20%), dipper (10-20%), non-dipper (0-10%) and riser (increase of night blood pressure).

Results: In 52 % of the patients good control of the blood pressure in 24-hours ABPM was registered, while 48% of patients were not controlled. 54,4% of patients were presented low CVR, 14,2% medium CVR and in 6,7% the CVR was high. The most frequently observed was the dipper circadian profile (44%), followed by the non-dipper (36%) and the riser (20%) patterns. The most common reason for requesting the ABPM query was to know the circadian pattern of BP (42.8%), followed by suspicion of white coat syndrome (32.7%).

Discussion: In this study we recorded and described the clinical characteristics of a group of patients who were subjected to a study of 24-hours ABPM, from a primary care service, being similar to those referred by other studies already published.

Conclusions: 52% of patients who requested 24-hours ABPM were not controlled. 56% of patients studied showed a circadian pattern with inadequate BP night decrease.

Poster 42

The importance of Blood Pressure in Risk for Intracranial Arterial Stenosis in Young Korean Subjects with Elevated Glycated Hemoglobin Levels

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Background: Ischemic stroke is known to be an important vascular complication of diabetes. Intracranial arterial stenosis (ICAS) is considered as an important cause of stroke in Asians. We aimed to analyze the risk for ICAS assessed by transcranial Doppler (TCD) ultrasonography in different groups of young Korean subjects divided by glycated hemoglobin (HbA1c) levels.

Methods: This study included 10,534 participants (81.3% men, mean age 43 years) from a health screening program, in whom TCD ultrasonography was used to detect 50% ICAS based on criteria modified from the SONIA trial. The subjects were divided into three groups according to HbA1c levels; HbA1c5.7%, 5.7≤HbA1c6.5%, HbA1c≥6.5% or medication for diabetes.

Results: Among the participants, 3.1% of the subjects had ICAS. The subjects with ICAS tended to have higher mean HbA1c level compared with those without ICAS (5.8±0.8 vs. 5.7±0.6, p=0.056). The proportion of subjects with ICAS significantly increased as the HbA1c increased from the 1st to 3rd group (2.8%, 3.1%, 4.8%, p for trend = 0.010). In logistic regression analysis with ICAS as the dependent variable, the group with HbA1c≥6.5% showed significantly increased odds ratio (OR) for ICAS with subjects HbA1c5.7% as the reference after adjustment for confounding variables (1.548, 95% confidence interval 1.048-2.285). However, this significance disappeared with inclusion of presence of hypertension in the model.

Conclusion: The risk for ICAS assessed by TCD was increased in subjects with HbA1c≥6.5% in young Korean subjects. However, this significance was attenuated after adjustment for presence of hypertension, suggesting the importance of hypertension in ICAS.

Poster 43

Weight Reduction in Obesity Diabetes Patients

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Objectives: determine if a group of motivation, along with the usual intervention, is more effective than the latter in the treatment of overweight, obesity and other cardiovascular risk factors in diabetes patients

Methods: clinical multicenter of 26 months of follow-up, including 864 patients with overweight and obesity. Is randomized Basic Areas of health (ABS). A (intervention) Group received usual care of diet and exercise more 32 sessions of motivational intervention group led by a nurse trained by an expert psychologists. The control group received only the usual care every 3 months.

Results: In the second year, patients in the control group presented a loss of 1 Kg while the reduction in the intervention group was 2.5 Kg (p=0.009)(CI 95%: 0.3-2.7). In diabetes group presented a loss of 1,4 kg

Participants who received the group motivational intervention had significantly greater improvements in cLDL, Chdl, cHDL/cLDL and in triglyceride level (p: 0.001). They also showed greater improvements in waist circumference at 24 months. Blood pressure was essentially unchanged from normal baseline values, with the exception of a decrease in diastolic blood pressure (DBP) at the end of the first year in the intervention group, which was not subsequently maintained

Conclusions: combination of usual care with interventions of motivation in group by trained nurses was more effective in the reduction weight in overweight or obese non-diabetic with regard to diabetics

Poster 44

Effects of Continuous Treatment with Testosterone Undecanoate Injections (TU) in 115 Hypogonadal Men on Cardiovascular Risk Factors: Real-Life Data from an Observational Registry Study

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Background: The longest-term follow-up on testosterone therapy (TTh) in hypogonadal men published in the literature is 8 years. In this registry study, we assessed effects of TRT beyond this period.

Methods: 115 hypogonadal (T≤12 nmol/L) men received TU 3-monthly for up to 11 years. Cardiovascular risk factors were measured at every other visit. Results of 10 years follow-up are reported.

Results: Mean age: 59.1±9.4 years (min.: 19; max.: 80). 51.3% were obese, 43.5% overweight, and 5.2% had normal weight.

Total T normalised from 7.8±2.3 nmol/L to trough levels of 17-20 nmol/L (p0.0001).

Waist circumference decreased from 106.5±8.7 to 92.3±5.3 cm, weight from 97.3±12.9 to 84.7±7 kg, BMI from 30.8±4.3 to 27.1±2.5 kg/m^2 (p

Fasting glucose decreased from 6.19±1.98 to 4.28±0.26 mmol/L, HbA_{1c} from 6.38±1.06 to 5.42±0.35% (p

Total cholesterol (TC) decreased from 6.5±1.21 to 4.46±0.31, LDL from 4.06±0.66 to 2.54±0.46, triglycerides (TG) from 2.69±1.02 to 1.8±0.24, HDL increased from 1.1±0.33 to 1.46±0.16 mmol/L (p

TC: HDL ratio improved from 6.59±2.82 to 3.08±0.33, non-HDL cholesterol from 208.74±52.35 to 115.5±11.31 mg/dl, TG:HDL ratio from 6.24±3.53 to 2.82±0.38 (p

Systolic blood pressure decreased from 135.24±12.77 to 120±2.56, diastolic blood pressure from 82.71±7.87 to 74.33±3.81 mmHg, pulse pressure from 52.53±12.1 to 45.67±3.3.

Aspartate aminotransferase (AST) decreased from 28.33±13.02 to 20.67±2.99, alanine aminotransferase (ALT) from 34.62±23.49 to 28.28±24.27 U/L (p

C-reactive protein (CRP) decreased from 1.39±0.69 to 0.62±0.235 mg/dl (p0.0001).

4 patients dropped out, 2 due to relocation, 2 were lost to follow-up.

No major adverse cardiovascular event (MACE) occurred during the entire observation time.

Conclusions: Long-term TRT sustainably improved anthropometric and metabolic parameters as well as blood pressure in hypogonadal men, thereby potentially reducing cardiometabolic risk.

Poster 45

Coffee Consumption is a Predictor of Prediabetes and Cardiovascular Events in Young Stage I Hypertensives

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Background: Controversy still exists about the long-term cardiovascular and metabolic effects of coffee consumption in hypertension. Aim of the study was to assess the predictive capacity of coffee use for cardiovascular events (CVE) and the long-term effects of coffee on blood pressure (BP) and glucose metabolism.

Methods: The analysis was made in 1201 non-diabetic young-to middle age, stage I hypertensives from the HARVEST study. Ambulatory BP monitoring was performed in all.

Results: 26.3% were abstainers, 62.7% were moderate coffee drinkers (1-3 cups/day) and 10.0% were heavy coffee drinkers (>3 cups/day). During a 12.5 year follow-up 60 CVE occurred. In multivariable Cox analyses, coffee consumption was a significant predictor of development of hypertension needing treatment: hazard ratios (HR) of 1.5 (CI,1.1-1.9) for heavy drinkers and 1.1 (0.9-1.3) for moderate drinkers compared to abstainers. Also, coffee was a predictor of future prediabetes with HRs of 2.0 (1-3-3.1) and 1.3 (0.9-1.7), in the heavy and moderate drinkers, respectively. In multivariable Cox analyses, adjusted for several clinical variables including 24h BP and heart rate and follow-up changes in body weight, both coffee categories were independent predictors of CVE with HRs of 4.3 (1.3-13.9) for heavy coffee drinkers and 2.9 (1.04-8.2) for moderate drinkers. Inclusion of hypertension development attenuated the strength of the coffee-CVE association: HRs of 3.9 (1.2-12.5) for heavy and of 2.8 (0.99-7.8) for moderate drinkers. When future prediabetes was also incorporated, the relationship was of borderline significance for heavy coffee drinkers (HR, 3.2, 0.94-10.9) and was no longer significant for moderate drinkers (HR, 2.3, 0.8-6.5).

Conclusions: Coffee use is linearly associated with increased risk of CVE in stage 1 hypertension. The effect of coffee on CVE seems to be at least partially mediated by its long-term effects on BP and glucose metabolism. Coffee consumption should be reduced in young-to-middle-age patients with hypertension.

Poster 46

White-Coat Hypertension as a Predictor of Long Term Normotension in Subjects Screened for Stage I Hypertension

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Background: For how long stage I hypertensives should be followed with lifestyle measures before starting treatment is not well known. The aim of the study was to evaluate whether normal ambulatory (A) blood pressure (BP) can predict long-term normotension.

Methods: We investigated 1114 subjects, 33±9 years, screened for stage 1 hypertension, who remained untreated for at least 3 months and had complete follow-up data for at least two years. Criteria for starting drug treatment were based on current available guidelines.

Results: After a mean follow-up of 11±6 years, BP fell to within normal values in 214 (19%) participants (Normotensives); the BP decline was -7±11/-5±7 mmHg after 1 year and was -14±11/-8±7 mmHg at follow-up end. White-coat hypertension was present at baseline in 35% of Normotensives and in 19% of the participants who met the criteria for treatment (Hypertensives)($p=0.000001$). After 3 months, the rate of participants with normal ABP was 42% in Normotensives and 22% in Hypertensives ($p<0.000001$). The follow-up decline of heart rate was 6±10 bpm and 2±11 bpm, respectively, in the two groups ($p=0.000006$). ABP after 11 years remained virtually unchanged in Normotensives (-1±9/1±8 mmHg) and increased by 4±12/3±9 mmHg in Hypertensives ($p<0.000001/0.002$). In a multivariable Cox regression, normal ABP at baseline (Hazard ratio=0.76, 95%CI=0.64-0.90) or after 3 months (HR=0.69, 0.58-0.81) was a significant predictor of future normotension. However, an office BP decline >10 mmHg after 1 year was an additional potent predictor of future normotension (HR=0.58, 0.47-0.72). Cardiovascular events occurred in 0.5% of the Normotensives and 5.5% of the Hypertensives ($p=0.001$).

Conclusions: In low risk young-to-middle-age stage 1 hypertensives a long period of observation should be allowed before deciding whether to start drug treatment. A normal ABP, especially after 3 months, but also the office BP decline after 1 year are strong independent predictors of this favourable outcome.

Poster 47

Influence of Long Term Therapy with Eprosartan versus Ramipril on BP Variability and LV Remodeling in Essential Hypertension

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Summary: Hypertension is a major risk factor for cardiovascular morbidity and mortality worldwide. Blood pressure variability (BPV) is considered to be in relation to prognosis (1). Left ventricular hypertrophy (LVH) is a cardinal maladaptive manifestation of hypertensive organ damage and an important biomarker of extra-cardiac alteration (13-14). Therapeutic strategies should aim both excessive BPV and LVH regression and angotensin-converting enzyme or angiotensin II receptor blockers may be treatment of choice of these conditions.

Purpose: To compare the effect of eprosartan or ramipril on BP variability and LVH in hypertensive patients.

Methods: Study was enrolled 101 patients with essential hypertension (49,5% men; mean age 50,11±0,79 years) with excessive BPV , LVH and DD. All patients were randomly assigned to treatment with ramipril (R-gr; n=56, mean dose=15,3mg±1,2 mg/daily) or eprosartan (E-gr; n=45, mean dose=850±12,4 mg/daily). Ambulatory blood pressure monitoring (ABPM), transthoracic echocardiography (TE), and 6MWT were performed at baseline and after 6, 12-months period of treatment.

Results: At baseline, group did not differ statistically with respect to age, clinic, hemodynamic and echocardiografic status (table 1). After 6 months period, there was a statistical improvement (*p0.01)* in systolic and diastolic BPV in both treatments groups, and this tendency was even more evident at the end of the study (table 2) with a greater improvement in E-gr (*p0.01)*. LV remodeling indices, as well as geometry of left ventricular chamber, have a beneficial evolution in both study groups, but more significant (*p0.05)* in the E-gr with maximum effect at the end of the study. By this time, the number of patients treated with eprosartan who expressed normal pattern of LV geometry appearce to be almost twice higher compared to group randomized to treatment with ramipril (table 2).

Conclusion: Both drug-regiment have shown beneficial effect on blood pressure variability and regression of left ventricular hypertrophy, but these improvements were significantly greater in the eprosartan group.

Poster 48

Prevalence of High Risk for Obstructive Sleep Apnea by the Berlin Questionnaire among Thai Male Healthcare Workers

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Background: Obstructive Sleep Apnea (OSA) is a common disease causing major cardiovascular diseases particularly hypertension. Male subjects are at risk for OSA than female subjects. The Berlin questionnaire is a beneficial screening tool for OSA and has 14 items. The Berlin questionnaire may need some adjustment for Thai or Asian population. The prevalence of being high risk for OSA by the Berlin questionnaire among Thai male healthcare workers is limited.

Methods: This study was performed in Thai male healthcare workers over the age of 35 and currently working at the Faculty of Medicine, Khon Kaen University. The Thai version of the Berlin questionnaire was randomly distributed. The required study population was 273 subjects to provide a confidence value of 95%. An item analysis of the Berlin questionnaire was evaluated as independent factors for being high risk of OSA by using a multivariate logistic regression analysis.

Results: Of the 273 distributed questionnaires, 135 subjects returned the questionnaire (49.5% response rate). Of those, 41 (30.4%) were identified as being at high risk of OSA. The OSA high-risk group had higher numbers of subjects with a body mass index (BMI) 25 kg/m^2 (70.73% vs 18.09%), hypertension (26.83% vs 8.51%), an increased weight in 2 years (68.29% vs 40.22%), an increased waist circumference in 2 years (56.10% vs 34.41%) than the low-risk group.

Conclusion: The prevalence of high risk for OSA in male healthcare workers was 30.4%.

Poster 49

Does Hypertensive Crisis Worsen The Quality of Life in Hypertensive Patients Caused by OSA?

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Background: Obstructive sleep apnea (OSA) is a common cause of hypertension and hypertensive crisis. Quality of life (QOL) of OSA patients is generally poor. This study aimed to evaluate if hypertensive crisis in OSA patients worsen their QOL

Methods: Newly diagnosed OSA associated hypertension patients treated at Hypertension/sleep clinic, Srinagarind Hospital, Khon Kaen University, were enrolled. The SF-36 questionnaire was distributed to all eligible patients. Patients were categorized into two groups; with and without hypertensive crisis. All domains of QOL were compared between both groups by using Wilcoxon Rank Sum test.

Results: There were 12 patients who eligible and completed the study protocol. The median age of all patients was 51.5 years with median BMI of 33.59 kg/m^2. Seven patients were male (58.33%). Three patients had history of hypertensive crisis (25.00%). Baseline characteristics in terms of OSA symptoms and risk factors were comparable between those with and without hypertensive crisis. All domains of QOL by the SF-36 were not statistically significant between both groups.

Conclusion: The QOL in OSA patients with and without hypertensive crisis were comparable.

Poster 50

Predictors of Hypertension in Hemodialysis Patients According to Residual Renal Function

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Background: Hypertension in population with end-stage renal failure is a frequent problem. Its clinical significance is controversial and its pathophysiology is not well understood. The purpose of this transversal study was to analyze clinical and analytical measures in a chronic hemodialysis population (N = 41) according to their residual renal function to identify predictors of hypertension.

Design and Methods: Patients were distributed in two groups according to presence or absence of residual renal function. Several parameters that have been associated to hypertension both in general population and chronic hemodialysis population were analyzed on multivariate analysis using SPSS Version 19. Clinical parameters, including pulse pressure and abdominal perimeter, and analytical parameters, such as dialytic efficacy, inflammatory markers, lipid profile, vitamin D3 levels, normalized protein catabolic rate, were included among others for this analysis.

Results: In the population analyzed 63,4% of patients were male, average age 69,37 ± 16,13 years and 31,7% were hypertensive. On multivariate analysis, dialytic efficacy parameters (eKt/v) and ferritin were the only independent predictors of hypertension (β -0.41; p 0.004 and β -0.39; p 0.006, respectively) in chronic hemodialysis patients with residual renal function. For the population without residual renal function only dialytic efficacy was an indepent predictor of hypertension (β -0.42; p 0.004). None of the other parameters were predictors of hypertension in this chronic hemodialysis population.

Conclusion: For patients without residual renal function, dialytic efficacy seems to be the most important predictor of hypertension. In patients with some residual renal function, dialytic efficacy remains an independent predictor of hypertension, however inflammatory markers such as ferritin seem to be important too as they correlate inversely with blood pressure levels.

Poster 51

Chronic Renal Failure Associated with Heavy Metal Contamination of Drinking Water in Hail, KSA

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The main threats to human health from heavy metals are associated with exposure to Pb, Cd, Cu, Mo, Zn, Ni, Mn Co and Cr. is mainly via intake of drinking water being the most important source in most populations. These metals have been extensively studied and their effects on human health regularly reviewed by international bodies such as the WHO. Heavy metals have been used by humans for thousands of years.

Although several adverse health effects of heavy metals have been known for a long time, exposure to heavy metals continues, and is even increasing in some parts of the world, in particular in less developed countries, though emissions have declined in most developed countries over the last 100 years. A strong relationship between contaminated drinking water with heavy metals from some of the stations of water shopping in Hail, KSA and chronic diseases such as renal failure, liver cirrhosis, and chronic anemia has been identified in this study. These diseases are apparently related to contaminant drinking water with heavy metals such as Pb, Cd, Cu, Mo, Zn, Ni, Mn Co and Cr. Renal failure is related to contaminate drinking water with lead and cadmium, liver cirrhosis to copper and molybdenum, and chronic anemia to copper and cadmium. Recent data indicate that adverse health effects of cadmium exposure may occur at lower exposure levels than previously anticipated, primarily in the form of kidney damage but possibly also bone effects and fractures.

The general population is primarily exposed to mercury via drinking water being a major source of methyl mercury exposure, and dental amalgam. During the last century lead, cadmium, zinc, iron and arsenic is mainly via intake of drinking water being the most important source in most populations. Long-term exposure to lead, cadmium, zinc, iron and arsenic in drinking-water is mainly related to primarily in the form of kidney damage.

Studies of these diseases suggest that abnormal incidence in specific areas is related to toxic materials in the groundwater and thereby led to the contamination of drinking water in these areas.

Poster 52

Vitamin D Deficiency Impact on Outcome after Cardiac Surgery

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Background: Deficiency of vitamin D is known to be highly prevalent worldwide. Traditionally it has been associated with musculoskeletal disorders, however, in recent years, it has been recognized that deficiency of vitamin D also influences other organ systems, including the cardiovascular system. The aim of this study was to seek possible evidence on the effect of vitamin D deficiency on cardiac surgery outcomes.

Methods: A prospective cohort study was done in P. Stradins Clinical University Hospital. A total of 71 patients participated in this study from July 2015 to January 2016. Levels of 25-hydroxyvitamin D (vitamin D) were assessed twice – prior to surgery and in the following week after surgery. Patients were observed for the length of their hospital stay to assess their laboratory and clinical findings and possible complications following cardiac surgery. Obtained data was analysed using IBM SPSS Statistics Version 20 and Microsoft Excel 2007.

Results: Of the 71 patients who participated in this study, the mean vitamin D level before surgery was 23,81 ng/ml. 27% (n=19) of patients had values above 30 ng/ml, 38% (n=27) had values below 20 ng/ml and 8% (n=6) had values below 10 ng/ml. Vitamin D levels measured after surgery had significantly lower mean value- 16,91 ng/ml (p0,001). Preoperative vitamin D level showed no statistically significant correlation with any of preoperative laboratory measurements. Preoperative vitamin D level showed weak, statistically significant correlation with left ventricle ejection fraction (r=0,244, p=0,04) and all-cause in-hospital complications (r=-0,277, p=0,022), but failed to show statistically significant correlation with cardiac and cerebrovascular complications, length of hospital stay, length of stay in intensive care unit and use of inotropes after cardiac surgery.

Conclusions: Most of the patients undergoing cardiac surgery have insufficient or deficient levels of vitamin D. There is statistically significant decrease in vitamin D levels after cardiac surgery. Preoperative vitamin D levels could be associated with complications after cardiac surgery and should be studied further.

Poster 53

Impact of the Renal Disease on the Morphologic Changes of Carotid Artery and Coexistence of Vascular Diseases: A Cross Sectional Study Focusing on CKD Stage

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Background: Renal disease is an interacting factor to metabolic syndrome and atherosclerosis (AS). We investigated the morphologic changes of carotid artery (CA), which considered as a window representing systemic AS status, in association with coexistence of vascular diseases and clinical factors analysis focusing on chronic kidney diseases (CKD) stage.

Methods: The study was carried out in 143 subjects with various CKD. Calculated intima-media area (cIMa) and plaque were measured using high resolution B-mode US. The coexistence of vascular diseases was evaluated based on Index of Co-Existing Diseases (ICED). Data were analyzed within and throughout the CKD stage.

Results: Subjects consisted of CKD stage 3 (n=49), 4 (n=44) and 5 (n=50). cIMa increased as the CKD progressed (stage 3, 13.0±3.14; 4, 17.5±3.2; 5, 18.9±1.8 mm^2; *P*0.001). Age was an independent factor associated to cIMA in the stage 3 and 4, meanwhile BP was in stage 5. Carotid plaque increased significantly in stage 5 (50% in unilateral, 40% in bilateral vs. stage 3, 11.7%, 0%; stage 4, 27.7%, 4.5%; *P*0.001). The concomitant vascular diseases also increased in the stage 5 (45.5% vs. stage 3, 5.8%; stage 4, 18.2%;*P*0.001), which correlated with carotid plaque significantly across the stages. Smoking contributed to plaque in the stage 3 and 4. In the stage 5, CRP was an independent factor contributing to both cIMa and plaque. Logistic regression analysis for all stages revealed CKD stage (HR 6.2) was an independent contributing factor to cIMa and CKD stage (HR 2.1) and smoking (HR1.7) were to carotid plaque and vascular disease.

Conclusion/Discussion: The results suggest that CKD stage itself independently accelerates AS beyond aging effect. CA morphology reflected well the status of systemic AS. Because plaque and vascular diseases significantly manifested after CKD stage 5, it is mandatory to investigate if the dialysis treatment accelerates AS.

Poster 54

Elevated Serum Bilirubin Levels Provide Protection from Cardiovascular Disease

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Background: We tested the hypothesis that higher bilirubin, a bile pigment possessing antioxidant properties, is associated with decreased cardiovascular disease (CVD) risk.

Methods: This study analyzed data from the Korean Health and Genome Study to examine the impact of serum total bilirubin (TB) on CVD. TB was measured in a total of 8,844 subjects (4,196 males and 4,648 females) and evaluated for the development of new onset CVD from 2001 to 2012 (median 8.1 years of follow-up).

Results: During the follow-up period, 689 cases of incident CVD (7.8%) were identified and the prevalence of metabolic syndrome (MetS) at baseline was 26.1%. The incidence of MetS decreased across bilirubin tertile categories. In addition to MetS itself, individual components of the MetS significantly decreased with increase of the bilirubin tertiles. Moreover, the incidence of CVD decreased across bilirubin tertile categories. Hazard ratio (HR) for developing CVD and coronary heart disease (CHD) was significantly lower in the highest tertile group (0.63 mg/dL) compared with the lowest (0.44 mg/dL) after adjusting for all confounding variables (HR 0.809 and HR 0.769, respectively)

Conclusion: In the present longitudinal study, a significant negative relationship was demonstrated between baseline bilirubin levels and incident CVD, thereby suggesting that mildly elevated bilirubin may play a protective role against incident CVD.

Poster 55

The Gly482Ser Genotype at the PPARGC1A Gene is Associated with a Higher Risk of Hypertension

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Background: The protein encoded by the PPARGC1A gene, the peroxisome proliferator activated receptor-γ coactivator-1 (PGC-1), is a transcriptional coactivator of the nuclear receptor PPARγ which plays a role in controlling fatty acid oxidation and energy metabolism.

Objectives: To assess the prevalence of Gly482Ser mutation in the population of Balearic Islands and association between this mutation and cardiometabolic risk factors.

Methods: A total of 527 people from Balearic Islands (Spain) were included in the study. Anthropometric measurements, blood pressure and fasting blood tests for biochemical analysis were obtained from all subjects. The genetic analyses were done on genomic DNA isolated from human leukocytes. PPARGC1A polymorphisms were analysed by real time PCR using specific labelled probes.

Results: 42.5% (224/527) of subjects were heterozygote for PPARGC1A and 11.2% (59/527) homozygote for mutated PPARGC1A. Heterozygote PPARGC1A polymorphism was more frequent among Balearic Islands subjects than in population from other countries. Heterozygote adults were more likely to had hypertension (≥140/90 mmHg, including antihypertensive treatment) than wild type subjects (OR: 4.63, 95% CI: 1.84-11.65). No associations were found between mutation and anthropometrical and biochemical parameters.

Conclusions: The results evidence that the single nucleotide polymorphism (Gly482Ser) at the PPARGC1A gene increases the risk of hypertension whereas no relation was evidenced with other components of metabolic syndrome.

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Poster 56

Circulating Monocyte Count is Positively Associated with Chronic Inflammation and Atherosclerosis in type 2 Diabetes Mellitus

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Background: Previous studies have shown that circulating leukocyte subtype counts, especially monocyte count, are associated with a risk of cardiovascular disease. However, little is known about the association of circulating monocyte count with chronic inflammation, visceral fat accumulation, serum adiponectin level, and atherosclerosis in type 2 diabetes.

Subjects and Methods: This is a cross-sectional study with a total of 276 Japanese patients with type 2 diabetes (mean age, 62.3 years; 63% men). None of them had hepatic or renal dysfunction so far. Intima-media thickness (IMT) of common carotid artery was evaluated by high-resolution B-mode ultrasonography. Fat areas of visceral (V) and subcutaneous (S) were evaluated by performing computed tomography scan at the level of the umbilicus. Serum total adiponectin levels were measured by an ELISA kit.

Results: Multiple regression analyses adjusted for age, duration of diabetes, body mass index (BMI), HbA1c, and estimated glomerular filtration rate (eGFR) showed that V/S ratio and high sensitive CRP (hsCRP) were significantly and positively associated with monocyte count (b=0.24, p0.001 and b=0.17, p=0.025, respectively), while serum adiponectin was not (b=-0.12, p=0.107). Multiple regression analyses adjusted for risk factors of atherosclerosis such as age, duration of diabetes, BMI, HbA1c, fasting C-peptide, eGFR, albuminuria, systolic and diastolic blood pressure, triglyceride, HDL-cholesterol, and LDL-cholesterol (model 1) showed a significant and positive association of monocyte count with maximum IMT, average IMT, and plaque score independently of V/S ratio (b=0.38, p0.001; b=0.23, p=0.004; and b=0.22, p=0.005, respectively). However, when hsCRP was added as an independent variable (model 1 + hsCRP), the association turned into no significance (b=0.11, p=0.164; b=0.12, p=0.104; and b=0.14, p=0.056, respectively).

Conclusion: These findings suggest that increased circulating monocyte count is associated with chronic inflammation and atherosclerosis in patients with type 2 diabetes.

Poster 57

Serum Fibroblast Growth Factor-21 is Associated with Renal Sinus Fat Increasment Independently of Total Intraabdominal Obesity

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Pathways through which obesity might cause renal disease are not well understood. Recent studies have associated ectopic lipid accumulation in the kidney with obesity-related renal disease. Human studies indicate that circulating levels of fibroblast growth factor-21 (FGF21) increased in obese individuals. FGF21 was found to closely associated with renal dysfunction in end-stage renal disease subjects. We hypothesised that renal sinus (RS) fat volume may be independently associated with increased level of FGF21.

The study included 110 subjects (60/50 F/M; age 39.8±5.8). CT images were captured and RS fat accumulation was measured using the 3D-Doctor software. Both kidneys and RS fat were measured, and ratio left kidney sinus fat/left kidney (LS/LK) and right kidney sinus fat/right kidney (RS/RK) were calculated. Intraabdominal (IA) fat volume was measured at the level of renal hilus. FGF21 serum level was detected by ELISA assay. Partial rank correlation was used to adjust the association between LS/LK, RS/RK and FGF21 after accounting for the IA fat volume. According on sex-specific 75th percentiles of FGF21 levels all measurements were divided into two groups and analysed by Mann-Whitney U test

FGF21 correlated with both FGF21 correlated with both LS/LK and RS/RK ratios ($r=0.50$, $p<0.001$; and $r=0.45$, $p<0.05$). There were significant ($p<0.05$) increasment of both LS/LK (0.0075; (0.0019; 0.0145) and 0.0142 (0.0077; 0.0332))* and RS/RK (0.0027; (0.0003; 0.0051) and 0.0084 (0.0017; 0.0311))* ratios when data were divided according on sex-specific 75th percentiles (234.32 pg/ml) of FGF21.

Taken together, these results suggest that serum FGF21 level may be increased in individuals with reduced renal function because of the increased fat accumulation in the renal sinuses.

*Data are presented as median (25^{th}, 75^{th} percentiles)

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Poster 58

Relationship between Endothelial Vascular Function and Clinical Severity of Metabolic Syndrome

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Background: The purpose of this study was to determine the relationship between the flow-mediated vasodilatation of the brachial artery (FMD) and the clinical severity of metabolic syndrome.

Methods: We measured FMD and nitroglycerine-induced vasodilatation in 157 subjects (mean age65.8±11.4 years), including 46 metabolic syndrome with coronary artery disease (MS with CAD group), 34 metabolic syndrome without coronary artery disease (MS without CAD group), 77 age- and sex- matched patients without metabolic syndrome (non-MS group)

Results: FMD was significantly impaired in the MS with CAD group compared to that in the other two groups (non-MS group, 4.4±1.9; MS without CAD group, 3.6±1.7; MS with CAD group, 2.7±1.7; P

Conclusions: There was no significant difference in nitroglycerine induced vasodilatation between MS patients with and those without CAD, but FMD was significantly smaller in MS patients with CAD compared with those without CAD.

Poster 59

Effect of Uric Acid Lowering Therapy on Kidney Function in Type 2 Diabetes Patients

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Kidney dysfunction accompanies by hyperuricemia, and hyperuricemia can deteriorate kidney function, forming a vicious cycle to the kidney. Uric acid lowering therapy was performed to evaluate the effect on kidney function in type 2 diabetes patients.

Type 2 diabetes patients (n=14) were treated with uric acid lowering drugs. Serum uric acid, estimated glomerular filtration rate (eGFR), blood pressure, HbA1c, and fasting blood glucose were measured before and after the treatment. The parameters at the point that serum uric acid decreased under 6.0 mg/dl were compared to the initial parameters at week 0.

The initial value of serum uric acid was 7.9±0.2 mg/dl and it decreased to the endpoint in all patients. The average value at the end point was 5.5±0.1 mg/dl. eGFR was significantly increased at the endpoint by the treatment (66.9±4.6 to 71.9±5.0 ml/min/1.73m^2, $p<0.05$), and urine albumin-creatinine ratio was significantly reduced (49.3±15.8 to 36.4±12.2 mg/g-Cre, $p<0.05$). There was positive relationship between the initial value of serum uric acid and the change of eGFR ($r=0.68$, $p<0.01$). There were no changes in other parameters.

Controlling uric acid in type 2 diabetes patients may be important to prevent or slow the progression of diabetic nephropathy.

Poster 60

A Link between Endocrine Disrupting Chemicals and Metabolic Health

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Background*:* A subset of obese individuals does not exhibit metabolically unfavorable features, so-called metabolically healthy obese (MHO). Recently, serum levels of polychlorinated biphenyls (PCBs), chemicals with endocrine disrupting properties, have been found to be lower in MHO versus metabolically unhealthy obese (MUO).

Objective: We studied the PCB serum levels during and after weight loss and their relation with metabolic health.

Research Design and Methods: We determined metabolic health features (weight, blood pressure, lipids, inflammation, glucose metabolism) and serum PCB levels of 27 PCBs in a cohort of 184 overweight and obese subjects. Metabolic health was evaluated using the criteria of the metabolic syndrome (MetS+ or MetS-) or extended criteria taking into account inflammation and insulin resistance (MHO vs MUO). Participants were treated with lifestyle counselling or bariatric surgery. A metabolic and toxicological re-evaluation was performed after 6 and 12 months.

Results: At baseline, serum ΣPCB levels were significantly higher in MUO vs MHO (ΣPCBs 138 ±105 vs 365 ± 481 ng/g lipid weight, p= 0.01), but not in MetS+ vs MetS-. No difference was detected in procentual increase in PCB serum levels in MetS+ vs MetS- (median 58% vs 43% at 6 months and 31 vs 69%). Comparing persistent versus resolved MetS and MUO didn't reveal any difference in ΣPCB levels increment (median 49% vs 58% at 12 months for MUO, p 0.05). In a regression model correcting for age, smoking and body mass index, PCB serum levels at baseline were not predictive for the persistence or resolution of a metabolically unfavorable state.

Conclusion: Our study indicates that the increment in serum levels of PCBs does not differ according to metabolic health and does not seem to influence the beneficial metabolic health effects of weight loss.

Poster 61

Natural and Extreme Evolution of Renal Failure as Injury to the Target Organ

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Female 84 years old, who presents advanced kidney failure by the natural evolution of the HTA.

In November 2012 she was performed a physical examination and analytical after several years without medical supervision of their own decision. She was diagnosed as hypertension, and renal failure stage 5 with FG of 12.6 ml/min., the rest of parameters highlights: creatinine of 307 umol/L. hemoglobin level of 11.6 g/dl, Na146 mmol/L, K 5.59 mmol/L and ferritin of 133.3 ug/l.

After several complementary tests, was ruled out secondary source of kidney failure.

Given the obvious progression of kidney disease, we propose to the patient a renal replacement therapy which rejects.

At the moment she is in treatment with Rocaltrol and amlodipine, and the latest analytical carried out the month of July 2015 presents: FG of 5.4 ml/min, creatinine of 573 umol/L. , hemoglobin of 9.5 g/dl, Na140 mmol/L and K of 5.09 mmol/L.

The assessment of Basic Activities of Daily Living (ADL) is maintained with respect to the valued in 2012.

Conclusion: The slow progression of kidney disease has facilitated an adaptation to the clinical symptoms.

Poster 62

Left Ventricular and Arterial Carotid Adaptation in Newly Diagnosed Hhypertensive Patients

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Objective: It is known that arterial stiffness increase in hypertensive patients. In the present study we assessed the local carotid stiffness in newly diagnosed and never treated hypertensive patients.

Methods: Participants were 145 normotensives and 145 age–and-sex match hypertensives (mean age 50±10 vs 51.9±12 years). Antropometric, laboratory analysis, office blood pressure (BP) measurements and echocardiography were performed. Left ventricular (LV) parameters, LV mass index, relative wall thickness (RWT), LV ejection fraction (LVEF), E/A ratio and E/Em were calculated. Carotid stiffness was performed at the level of the common carotid artery, using a high definition echo-tracking system implemented in the echo-machine (Aloka).

Results: Hypertensive patients were heavier (71.5±12.0 vs 81.9±13.1 Kg, $p<0.001$) and, after adjustment for weight and physical activity and heart rate (HR) they had higher total cholesterol (214.4±37.2 vs 215.7±44.9 mg/dL, $p=0.02$) and LDL-cholesterol (114.9±57.5 vs 129.4±45.7 mg/dL, $p<0.01$), LV mass index, relative wall thickness, E/A ratio were similar in the two groups, but significantly higher LVEF (62.9%±6.5% vs 64.6%±7.2%, $p=0.016$) was registered in hypertensives compared with normotensive subjects. After adjustment for HR, weight, physical activity and total cholesterol, systemic vascular resistance (1.73±0.52 vs 1.83±0.59, $p<0.001$) as well as β-stiffness (6.25±2.24 vs 7.95±3.65, $p=0.04$), Ep(81.4±31.3 vs 130.6±78.4kPa, $p<0.001$), one-point PWV (5.39±0.9 vs 6.5±1.6 m/s, $p<0.001$) were higher and AC (0.88±0.35 vs 0.67±0.24 mm^2kPa, $p<0.001$)was lower in the group of hypertensives.

Conclusions: In patients with new onset of hypertension, LV structure and diastolic function were similar to normal subjects, while LVEF was higher. Systemic vascular resistances as well as local carotid stiffness were higher in hypertensives also after adjustment for confounding factors.

Poster 63

Effect of OAD Therapy Change on Incidence of Hypglycemic Episodes in DM2 and Coronary Artery Disease Patients Holding Driver`s Licence: Data from Everyday Practice

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Background: Hypoglycemia is a risk factor for life-threatening events in diabetic patients, particularly if elderly or with CAD. Tight glycemic control may increase the risk of hypoglycemia, which can be particularly dangerous if occurring while driving a car. We interviewed patients about hypoglycemic episodes with validated questionnaire, during therapy with sulfonylurea or after switch to sitagliptin.

Methods: Patient files were reviewed, searching for diabetics holding driver`s licence and treated with Sulfonylurea. Those reporting hypoglycemic episodes (n=30) were switched to sitagliptin. Incidence of hypoglycemic episodes was compared before and after therapy switch.

Results: Of 30 diabetic patients (62,37±8,88 years old, 60% males) 17% had CAD. During sulfonylurea treatment, 30% of them reported ≥1 hypoglycemic episode with symptoms over 3 months (which was severe in 13.3% of patients); in contrast, only 3,3% of those patients had symptoms after switching to sitagliptin. Patients treated with sulfonylurea had significantly more symptoms of hypoglycemia ($t= 6,496$ $p<0,001$), more measured hypoglycemia ($t=3,523$ $p=0,001$) and severe hypoglycemia ($t=2,112$ $p=0,043$). Body weight was significantly higher in sulfonylurea group 88,36 ± 17,38 vs. In sitagliptin group 86,93 ± 16,86 after follow up.

Conclusion: Effective control of hypoglycemia is an important goal in diabetics. In addition to pathophysiological reasons, there are also practical considerations to prevent hypoglycemia as in drivers to prevent car accidents. We showed that therapy switch to sitagliptin resulted in a significant decrease of hypoglycemic episodes. A statistically significant decrease in body weight was also observed. Sitagliptin is a safer approach in »real world patients".

Poster 64

Plasma Free Amino Acid Model Predicts Four-Year Risk of Developing Metabolic Syndrome, Diabetes Mellitus, Dyslipidemia, and Hypertension in Japanese Population

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Plasma free amino acid (PFAA) profile is highlighted in its association with visceral obesity, and future diabetes. Indeed profiling potentially can evaluate individuals' future risks of developing lifestyle-related diseases, in addition to diabetes. However, few studies have been performed especially in Asian populations, about the optimal combination of PFAAs for evaluating health risks. We quantified PFAA levels in 3,701 Japanese subjects who had undergone the Ningen Dock comprehensive medical check-up system for periodic health examination in 2008 at the Health Care Center, Mitsui Memorial Hospital, and determined visceral fat area (VFA) by CT scan at the umbilicus in 865 subjects. The main inclusion criteria were as follows; subjects who had undergone the Ningen Dock system, not taking medications for lifestyle related diseases, aged at least 20 years, and giving informed consent to participate in the study. Then, model between PFAA levels and the VFA was constructed by multiple linear regression analysis with variable selection. Finally, a cohort study of 2,984 subjects to examine capabilities of the obtained model for predicting four-year risk of developing new-onset lifestyle-related diseases was conducted. The correlation coefficients of the obtained PFAA model against VFA was higher than simple PFAA level. Our model work well for future risk prediction. Even after adjusting for commonly accepted multiple risk factors, this model can predict future development of metabolic syndrome, diabetes mellitus, dyslipidemia, and hypertension. PFAA profile confers independent and differing contributions to increasing the lifestyle-related disease risks in addition to the currently known factors in a general Japanese population.

Poster 65

Red Wine Extract Decreases Pro-inflammatory Markers, Nuclear Factor-κB and Inducible NOS, in Experimental Metabolic Syndrome

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We aimed to analyse the effects of alcohol-free Alibernet red wine extract (AWE) on nitric oxide synthase (NOS) activity and pro-inflammatory markers such as nuclear factor-κB (NFκB) and inducible NOS (iNOS) protein expression in experimental metabolic syndrome. Young 6 week-old male Wistar Kyoto (WKY) and obese, spontaneously hypertensive rats (SHR/N-cp) were divided into control groups and groups treated with AWE (24.2 mg per kg per day) for 3 weeks (n = 6 in each group). Total NOS activity and endothelial NOS (eNOS), iNOS and NFκB (p65) protein expressions were determined in the heart left ventricle and aorta by Western blot and immunohistochemical analysis. All parameters investigated significantly increased in the aorta of SHR/N-cp rats. Pro-inflammatory markers such as NFκB and iNOS were increased in the left ventricle as well. AWE treatment did not affect total NOS activity and eNOS expression in the aorta; however, it was able to decrease NFκB and iNOS protein expression in both the left ventricle and aorta. In conclusion, in the cardiovascular system, Alibernet red wine extract decreased NFκB and iNOS protein expressions elevated as a consequence of developed metabolic syndrome. This effect may represent one of the protective, anti-inflammatory properties of Alibernet red wine polyphenols on cardiovascular risk factors related to metabolic syndrome.

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