POSTER SESSION

POSTERS' SESSION PS23:

HEART

CHANGE OF WALL THICKNESS OF MIOCARDIUM WITH ARTERIAL HYPERTENSION ACCORDING TO MORTEM EXAMINATION BY ETHNICITY (BETWEEN KAZAKH AND RUSSIAN HYPERTENSION PATIENTS)

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Objective: To study the ethnical features of left and right ventricles of the heart remodeling among patients who died after suffering from hypertension during the lifetime according to mortem examination in Semey (Kazakhstan).

Design and method: A retrospective study was conducted, which explored the autopsy protocols of patients suffered from hypertension that died during the sixteen-year period (from 1999 to 2014) in Semey, Kazakhstan. To analyse the available data in the study group, the values were taken that defined the parameters of the left and right ventricles at the time of autopsy. The normal wall thickness of the left ventricle (without papillary muscle) had the value of 0.7–1.2 cm, the right ventricle - 0.2–0.3 cm. We studied the changes in cardiac remodelling of the two most numerous study groups among Russian and Kazakh population.

Results: A mortem examination cardiac remodeling processes among patients with hypertension was conducted based on 674 data representing 407 male and 267 female, 208 Kazakh, 437 Russian and 29 other nationalities. The average age was 54.02 ± 11.84 (M+SD). Our analysis of those autopsy protocols of patients, who were suffering from hypertension and who died suddenly, showed that there were different changes in the settings of the left and right ventricles. Differences have been identified based on ethnicity. Right ventricular hypertrophy was detected in 86.9% of cases. When comparing the right ventricular wall thickness among Russian and Kazakh, statistically significant difference ($p = 0.001$) was found, using the criterion of Mann-Whitney U at a significance level of 0.05. Categorical data were compared using chi-squared tests. The presence of right ventricular hypertrophy was detected among ethnic Russians in 90.5% (n = 382), ethnic Kazakhs – 78.9% (n = 153), Chi-square Pearson 15.81, $p < 0.001$.

Conclusions: High prevalence of having right ventricular hypertrophy (up to 86.9%) was identified among patients suffering from hypertension. Moreover, there is statistically significant difference in the thickness of the wall of the right ventricle by ethnicity. Greater distribution of right ventricular hypertrophy was observed in Russian population than Kazakh.

LEFT VENTRICULAR DEFORMATION IN PATIENTS WITH SYSTEMIC ARTERIAL HYPERTENSION BY 2D SPACKLE TRACKING ECHOCARDIOGRAPHY

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Objective: Systemic arterial hypertension represents an increase in cardiac afterload and the compensatory mechanism is the development of left ventricular concentric hypertrophy with diastolic dysfunction, and secondarily atrial dysfunction.
The aim of our study is to evaluate the left ventricular mechanical deformation by 2D spackle tracking echocardiography and estimate left ventricular longitudinal and circumferential strain in the patients with systemic arterial hypertension.

Design and method: We investigated 38 patients with systemic hypertension without heart failure, valvular or myocardial lesion and 36 healthy controls. The control group had no clinical symptoms, and the electrocardiogram and echocardiogram were normal. All patients had conventional transthoracic echocardiography following current guidelines and longitudinal and global longitudinal and circumferential strain by 2D speckle tracking. All statistical analyses were performed with SPSS version 17.0

Results: Statistically significant differences were not found between hypertensive and control patients in left atrial volume, inter-ventricular septum, posterior wall thickness, left ventricular diastolic diameter, left ventricular relative wall thickness, left ventricle mass index, E/A ratio, E/e´ ratio, systolic pulmonary artery pressure. The global circumferential strain showed significantly decreased ($p < 0.001$) in the patients with arterial hypertension compared to the controlled group (-17.8 ± 4 versus - 20.4 ± 6). The longitudinal strain also significant decreases ($p < 0.008$) in the hypertensive patients (-20.38 ± 2.3 versus -22.30).

Conclusions: In hypertensive patients the global longitudinal and global circumferential deformation was significantly decreased. The speckle tracking gives the knowledge of subclinical left ventricular dysfunction in hypertensive patients.

UBIQUINOL INNOVATIVE FORM PROVIDES CARDIOPROTECTION BY A SINGLE INTRAVENOUS INJECTION

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Objective: Introduction: Coenzyme Q10 (CoQ10) is the endogenous compound essential for mitochondrial function and bioenergetics of cells. In the body CoQ10 exists in two forms - oxidized (ubiquinone) and reduced (ubiquinol). The main role in achieving the protective effects of CoQ10 is due to the antioxidant properties of ubiquinol. Innovative dosage form of ubiquinol for intravenous administration was created for the first time.
Purpose: Experimental evaluation of cardioprotective efficacy of the innovative drug form of ubiquinol for intravenous administration.
Keywords ubiquinol, intravenous injection, cardioprotection, myocardial infarction.

Design and method: Method:The experiments were carried out on the rat model of myocardial infarct (MI) induced by coronary artery ligation. In 10 min after occlusion solubilized ubiquinol (10 mg/kg, group «MI + ubiquinol», n = 10) or saline (group «MI + saline», n = 12) was administered by intravenous injection. Sham operated rats were given saline (group «Sham», n = 8). Severity of the myocardium damage, CoQ10 tissue levels were evaluated on the 21st day after coronary occlusion. The CoQ10 content was measured by HPLC with electrochemical detection.

Results: Result: In group «MI + ubiquinol» aneurysm size of the left ventricle (13,19 ± 7,13 %) was much less than in group «MI + saline» (31,55 ± 17,9 %, $p < 0,05$). The interventricular septum in group «MI + ubiquinol» (2,61 ± 0,03 mm) was thinner than in group «MI + saline» (2,83 ± 0,27 mm, $p < 0,05$) and did not differ from «Sham» group (2,51 ± 0,29 mm). Only in the treated animals there was a correlation between the thickness of the interventricular septum and the level of ubiquinol in the myocardium ($r2 = 0.672$, $p < 0.05$), that shows that it was the administration of ubiquinol that caused the cardioprotective effect.

Conclusions: Conclusion: Intravenous administration of ubiquinol after coronary artery occlusion reduces the aneurysm size the left ventricle and prevents from the development of left ventricular hypertrophy in rats. This study was supported by the grant of Russian Science Foundation 14-15-00126.

CARDIAC DAMAGE IN ADULT ROMANIAN POPULATION

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Objective: To evaluate the prevalence of different types of cardiac damage among the adult population of an Est-European country with very-high cardiovascular (CV) risk, using the data from SEPHAR III national survey.

Design and method: A number of 1970 adults (52,5% females, mean age 48.45 ± 17.44 years) were included in SEPHAR III survey and were evaluated for cardiac damage by: left ventricular hypertrophy (LVH) defined by left ventricular