ical treatments have been identified yet, leaving the surgical intervention the only effective treatment.
Hypothesis. Our aim was to evaluate circulating microRNA (miRNA) profile in human myxomatous MVP to identify the pathological processes and thus new potential therapeutic targets.
Methods: We analyzed plasma obtained from 30 patients that underwent mitral valve repair due to MVP and 30 controls. TaqMan Array Human MicroRNA Card A (v2.0) was used to assess the expression levels of 384 miRNA. Validation were performed using real-time PCR and expressed as log fold change (logFC). Functional analysis were carried out with Cytoscape (v3.4.0) and ClueGO (v2.3.3). In vitro studies were performed on valve endothelial cells isolated from MVP specimens.
Results: MiRNA profiling revealed that in MVP patients 6 miRNAs were up-regulated, while 22 were down-regulated when compared to controls. Validation analyses confirmed that miR-150-5p (logFC=+0.46±0.06; p<0.0001), miR-210-3p (logFC=+0.23±0.06; p=0.01), miR-451a (logFC=+0.50±0.09; p<0.0001), and miR-487a-3p (logFC=+0.54±0.16; p=0.003) were significantly up-regulated in MVP. MiR-27a-3p (logFC=-0.32±0.09; p=0.004), miR-323a-3p (logFC=-0.36±0.10; p=0.004), miR-361-5p (logFC=-0.35±0.09; p=0.0002), and miR-376c-3p (logFC=-1.37±0.36; p=0.003) were significantly down-regulated in MVP. Functional analysis identified several biological processes: 1) cellular response to oxidative stress and mechanical stimulus; 2) regulation of stress fiber assembly; 3) apoptosis; 4) transforming growth factor beta signaling pathway; 5) adherens junction and focal adhesion regulation; 6) response to hypoxia-inducible factor 1 signaling pathway; 7) endothelial and smooth muscle cell proliferation; 8) ErbB and apelin signaling pathways. Finally, endothelial cells, under oxidative stress stimuli, showed a positive regulation of myxomatous degeneration with a concomitant release of miR-150-5p (logFC=+3.73±0.2; p<0.0001). Conclusions. To the best of our knowledge, this is the first study performed on human plasma and isolated valve endothelial cells from MVP patients, showing a strong association of miRNA and MVP pathology. The new identified pathways could represent new pharmacological targets to slow-down or even halt MVP progression.

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Gender features of myocardial infarction and stroke risk in general population with vital exhaustion in russia / siberia: who program monica-psychosocial

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Objective: To determine the gender differences influence of vital exhaustion (VE) in the risk of myocardial infarction and stroke in the general population aged 25–64 years old in Russia/Siberia.
Materials and Methods: In the III screening WHO program "MONICA-psychosocial" surveyed a random representative sample of the population aged 25-64 in 1994 (men = 657, women n = 870).
Results: VE level were: men 66.8%, in women 75.7%. The risk of MI among men with VE was HR =2. RR of MI in persons with VE were higher among divorced women HR = 5.4, than men HR = 4.7. Risk MI was higher in men with VE: primary education HR = 2.2; have never married HR = 3.7, widowed male HR = 7. Risk of stroke in patients with VE were higher in women HR = 3.34, than men HR=3.1. Risk stroke was higher only in men with VE: with incomplete secondary - primary education HR = 4.8; men, divorced HR = 3.8, widowed men at HR = 3.6.
Conclusion: Prevalence of VE was higher in women than in men. VE is a predictor of MI in men and stroke in both genders.

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Regulation of LTBP expression as a modulator of TGFb availability in patients with BAV

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Introduction: Bicuspid aortic valve (BAV) is the most common cardiac defect in human, estimated to affect 1-2% of the general population. However, surprisingly, more than 50% of patients undergoing aortic valve and/or ascending aortic surgery display a BAV, rather than a normal tricuspid aortic valve (TAV). People with BAV are consequently 50-70% more likely to develop ascending aortic aneurysm later in life, with no forewarning symptoms.
The association between BAV and ascending aortic aneurysm is believed to be two-fold. Firstly, the valve malformation disturbs the normal blood flow within the system, generating stress to the endothelial cells lining the interior of the aortic tissue, which might in turn modify signalling pathways. Secondly, it is likely that the genetic changes responsible for the development of a BAV also interfere with the structure of the ascending aorta, which has a common embryologic origin with the aortic valve, rendering it less resilient and more susceptible to dilatation and rupture.
Purpose: The aim of this project is to understand the extent to which cells issued from patients with BAV and TAV differ, and how these differences explain the aetiology of BAV-associated aortopathy. Specifically, the present work focuses on latent TGF-β-binding proteins (LTBPs) as regulators of TGF-β activity, which is of crucial importance in ascending aortic aneurysm development.
Methods: Although the exact role of TGF-β in aneurysm initiation and development is still unclear, it seems to differ between BAV-related and otherwise occurring aneurysms. Previous work demonstrated a difference in TGF-β availability between BAV and TAV patients, possibly due to differential sequestering of TGF-β in the extracellular matrix by latent TGF-β-binding proteins (LTBPs). Using electrophoretic mobility shift assay (EMSA) and luciferase reporter assays, the regulation of LTBP expression is studied in BAV and TAV systems, and compared.
Results: We have revealed the presence of protein binding regions in the promoter sequence of LTBP1. Further work is required to confirm whether these interactions are responsible for the regulation of LTBP1 transcription, which could explain the difference in LTBP level observed during aneurysm between BAV and TAV patients.
Conclusion: Differential regulation of LTBP expression in BAV and TAV, through the variation of transcription factors activity or other regulatory elements could explain, at least in part, the differences observed during aneurysm development between BAV and TAV patients.

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Modifications of short-term heart rate varibility and intrinsic pacemaker variability in an experimental model of metabolic syndrome

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Introduction: Metabolic syndrome (MetS) describes a cluster of cardiovascular and metabolic alterations such as abdominal obesity, reduced HDL and elevated LDL cholesterol, elevated triglycerides, glucose intolerance and hypertension. Diagnosis requires that any three out of these five criteria are present. MetS has been linked with a higher prevalence of cardiovascular mortality, including sudden cardiac death, but the mechanisms are not well understood. One possible mechanism underlying may be an abnormal modulation of autonomic activity, which can be quantified analyzing heart rate variability (HRV).
Purpose: To investigate the modifications that MetS produces in short-term HRV and the intrinsic modulation of pacemaker variability in isolated heart.
Methods: Male NZW rabbits were randomly assigned to a control (n=12) or a MetS group (n=13), fed during 28 weeks with high-fat (10% hydrogenated coconut oil and 5% lard), high-sucrose (15% dissolved in water) diet. After anesthesia (2% isoflurane), a 15 min ECG recording was performed (lead 1) at week 28. Then, their hearts were isolated and, after 15 min of stabilization, 15 min volume-conducted ECG was recorded. We analyzed short RR time series in vivo and in isolated heart using the following parameters: 1) Time domain: RR, HR, SDNN, triangular index (Ti), RMSSD and TINN; 2) Frequency domain: very low frequency (VLF), low frequency (LF), high frequency (HF), and LF-HF ratio; 3) Non-linear analysis: Poincaré (SD1, SD2) and sample entropy; 4) Time-frequency analysis (wavelet-based). Multivariate analysis of variance (MANOVA) was used for statistical analysis (p<0.05).
Results: Poincaré analysis of HRV showed a decreased SD2 at week 28 in MetS animals, indicative of a reduced parasympathetic activity and non-linear variability. We did not find changes in the rest of time-domain, frequency domain, non-linear and time-frequency parameters of HRV between groups. When comparisons were made within groups, we found a decrease in HR and Ti, and an increase in HF components of HRV (total power and normalized) when comparing week 28 and isolated heart measurements in both control and MetS groups (Table), suggesting a predominance of sympathetic activity in vivo. SD1 and SD2 of Poincaré plot increased in the isolated heart of MetS animals but remained unchanged in controls. No differences were found in the measured HRV parameters in isolated heart between control and MetS groups.
Conclusion: MetS produced changes in non-linear indices of short-term HRV indicative of a decreased parasympathetic activity at week 28. In isolated heart, and thus not submitted to extrinsic nervous or humoral influences, intrinsic pacemaker variability does not seem to be modified by the administration of a high-fat, high-sucrose diet during 28 weeks.

HRV parameter	Control		MetS	
	In vivo	*Ex vivo*	*In vivo*	*Ex vivo*
RR (ms)	238±29	297±63†	257±27	300±44†
HR (bpm)	254±32	210±39†	241±26	203±27†
Ti (ms)	8.9±4.4	2.8±1.5†	7.7±2.9	2.9±1.9†
HF power (%)	39.5±39.4	86.4±7.4†	21.9±28.3	79.7±23.3†
HF normalized (%)	41.8±4.1	86.3±7.3†	21.8±3.6	88.1±4.8†
Time-freq. HF power (%)	44.7±37.4	87.1±7.1†	35.9±25.7	87.2±5.5†
SD1 (ms)	5.8±5.6	14.2±13.9	4.8±3.8	11.3±17.6†
SD2 (ms)	20.1±11.5	16.6±14.0	13.4±6.0*	16.2±17.1†

HRV parameters. *p<0.05 vs. control. †p<0.05 *vs.* in vivo week 28.

Abstract P330 Figure.

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Are there gender specific differences in elderly regarding exercise treatment of cardiovasular diseases?

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Introduction: Hypertension (HT) affects 25% of the world's population and a major risk factor of cardiovascular diseases (CVD) (Carpio-Rivera, 2016). According to the Hungarian Hypertonia Register's data (Kekes, 2009) the prevalence of HT under 55 years is lower in women than in men but in the population above 75 years it is the opposite. Based on the research of Kekes et al. to reach the optimal blood pressure in overweight elderly patients is especially difficult.
Applied methods: We have reviewed and critically analyzed the available literature regarding the exercise treatment and gender specific differences in hypertensive elderly in connection with the lowering of CVD risks.