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Posters

Hsuan Lo, J Hypertens 2017, 6:3(Suppl)
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Altered NMDA receptor-nitric oxide (NO) signaling in the rostral ventrolateral medulla contribute to cardiovascular response of acute ethanol-exposure

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Consumption of ethanol (EtOH) has many effects on physiological functions particular in the central nerve system and cardiovascular system. Hypotension is one of the main features of acute excessive intake of ethanol (alcohol intoxication). In addition, chronic ethanol consumption has been associated with cardiovascular diseases, including hypertension and stroke. The precise mechanisms underlying ethanol regulation of cardiovascular function remains unclear. It is well known that central N-Methyl-D-Aspartate (NMDA) receptors are implicated in the modulation of glutamatergic transmission and important in regulating neuronal activity. Recent evidence also suggests that nitric oxide is a key neuromodulator within the central nervous system and its production is associated with NMDA receptor activation. The rostral ventrolateral medulla (RVLM) is known as a vasomotor center, which provides the basal sympathetic outflow and maintains blood pressure (BP). This study was carried out to test the hypothesis that NMDA and NO signaling in the RVLM are involved in the regulation of ethanol-induced changes in BP. The BP response was measured in urethane anesthetized SD rats weighing 280-350 g. EtOH (3.2 g/kg) was applied by intraperitoneal injection (IP). The samples of glutamate and NO were collected by micro dialysis every 15 minutes in the RVLM and then analyzed with HPLC-ECD and NOx analyzer, respectively. The results showed that IP ethanol elicited a significant increase in the level of glutamate and NO in RVLM and a reduction in BP. Microinjection of ketamine (an NMDA receptor antagonist) or L-NNA (an NOS inhibitor) into the RVLM, which was applied 5 min after administration of EtOH, attenuated EtOH-induced depressor effects. In addition, microinjection of ketamine suppressed the level of NO production. The results suggest that increases in NMDA receptors activation and enhancement of NO synthase activity in the RVLM may play a major role in ethanol-evoked hypotension.

Biography

Hsuan Lo is a PhD scholar, studied in the Department of Pharmacology and Toxicology at Tzu Chi University. His lab is interested in neuropharmacology particularly in alcohol effects on the central nervous system and cardiovascular function. His studies focus on the mechanism of acute ethanol intake action on the glutamate signaling within the rostral ventral lateral medulla (RVLM). He has performed the whole animal model with practiced skill in RVLM, microinjection of drug and femoral artery surgery for measuring blood pressure, and also have set up the HPLC system to detect the neurotransmitter content. On the other hand, his master's thesis was of Amyloid-beta peptides on NMDA receptor activation in rat sympathetic preganglionic neurons using whole cell, patch clamp technique. All his training has led him to know more about, how the CNS works to control cardiovascular function.

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Notes:

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Accepted Abstracts

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The fatal aortic valve mass – A case report

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Introduction: Cardiac valve tumors are rare. Fibroelastoma is the most common volvuli tumor, followed by Myxoma. Volvuli calcifications, thrombosis and abscesses may mimic tumors and they are called tumor like lesions.

Case report: A 58-year-old female patient presented for routine echocardiography prior to initiation of chemotherapy. She was recently diagnosed as suffering with advanced breast cancer. Echocardiography revealed normal left ventricular dimensions and systolic function, a large mobile mass was seen attached to the right coronary cusp of the aortic valve measuring about 14X15 mm prolapsing in the left ventricular outflow tract in diastole and causing moderate obstruction with a peak gradient of 43 mmHg and a mean gradient of 30 mmHg. By asking the patient about cardiac symptoms, she reported many attacks of syncope in the last few days but no dyspnea or chest pain. Patient was sent immediately for hospitalization and preparation for a lifesaving surgery but unfortunately, she developed Asystole few hours later and died.

Conclusion: Cardiac tumors are mostly benign but malignant tumors and volvuli tumors are always critical especially if they hinder the normal blood flow..

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High prevalence of pre-hypertension in mothers of young children in peri-urban Nepal: A study from the Jhaukhel-Duwakot Health Demographic Surveillance Site (JD-HDSS)

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Prehypertension is clinically defined as a level of blood pressure between normal and hypertension, i.e. elevated systolic blood pressure in the range of 120-139 or diastolic blood pressure between 80-89 mm Hg. Prehypertension remains neglected as a public health problem. As it has not been explored in mothers with small children in Nepal, we aimed to study prehypertension and its related factors including obesity-related parameters among mothers with children aged 1-7 years in Jhaukhel-Duwakot Health Demographic Surveillance Site (JD-HDSS) of Bhaktapur district. We prepared a sampling frame of all eligible mothers, and interviewed 962 of them. The trained enumerators also measured blood pressure, weight, height, waist and hip circumferences. We received ethical approval from the Nepal Health Research Council to conduct the study, and obtained informed verbal consent from the participating mothers. Mean age of the mothers was 29±4.6 years (range: 19-48). Twenty three percent of the participants had education level of less than grade 1. Most mothers (73%) were housewives, while the rest were employed (17%) or doing agriculture or labor work (10%). Sixty percent of participants had normal blood pressure while one-third (31.8%) of them had prehypertension. Ten mothers reported having been diagnosed with hypertension (10/916= 1.1%). Of these, six were on medication (6/10=60%). Of the six, only one had her blood pressure under control (1/6= 16.67%). Among the remaining 906 mothers, 69 had hypertension during the survey (69/916= 7.5%). Hence, the prevalence of hypertension was 8.6% (1.1%+7.5%), and out of 79 hypertensive mothers, only 10 knew that they had hypertension (awareness rate: 12.65%). Prehypertension was not associated with any of the Sociodemographic variables except for education. We found positive correlations between blood pressure and obesity parameters. Overweight and obese participants were 2.24 (95% confidence interval: 1.06-4.73) and 4.65 (95% confidence interval: 1.92-11.23) times, respectively, more likely to have prehypertension than underweight mothers. Our study demonstrated a high prevalence of prehypertension, coupled with high obesity parameters, among these peri-urban mothers. Preventive efforts at community level are urgently needed for these young mothers of Nepal.

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Antithrombitic treatment and tooth removal in teenage patient with HeartWare

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Twelve-year-old girl was admitted due to accidentally finding thrombus above aortic valve during control examination. Left Ventricular assistant devices Heart Ware was implanted for the patients three months earlier due to dilated cardiomyopathy. After this she was on Acenocumarol treatment (dosage is change based on currently, daily INR value). Patient since implantation had been undergoing systematically clinician control which includes echocardiography examination. During one of them a thrombus on aortic valve was detected. Physicians advised for immediate hospitalization of the patient; and fibrinolysis (Actylise and Heparin) was activated. Day by day echocardiography examinations founded thrombus degradation. We figured out that the possible reasons of valve vegetation may be bad oral cavity condition. Decision of sedation was made after consulting the dentistry. Before planning sedation day, the Acenocumarol was stopped and patient was on heparin. Tooth treatment had been performed with general anesthesia in operating theater. During those procedures, the extraction of 3 teeth was made; also 2 teeth were filled by composite and carious lesions were treated. After extraction, the bleeding occurred and due to LVAD patients antithrombotic therapy could not be stopped at all. Only available option was local pressure with tampons soaked with Exacyl (antifibrinolytic hemostatic used in severe hemorrhage). After oral cavity recovery and setting the Acenocumarol dose patient was sent home. Ten-day post discharge, patient had got control cardiology visit. There was no thrombus in the hearts valves since the oral cavity sedation had been performed.

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Association between angiotensinogen gene M235T polymorphism and plasma angiotensinogen level in essential hypertension

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Hypertension is a non-communicable disease and it is an important public challenge worldwide because of its high prevalence. Variants of genes encoding Renin-Angiotensin System have been extensively studied. AGT M235T polymorphism may be the functional genotype, as it affects the basal transcription rate of angiotensinogen. Probably, this phenomenon might explain the association of the *AGT* M235T genotype and the plasma angiotensinogen concentration. This case-control study was designed to determine the association of the *AGT* M235T gene variants with essential hypertension and its relationship to plasma angiotensinogen level in essential hypertension as well. In the present study, there were 144 subjects, 72 patients were essential hypertensive subjects collected from outpatient department of Mandalay General Hospital and 72 subjects for control group, which was age, sex, matched hypertensive subjects. After being informed consents, determination of blood pressure and BMI were done. The *AGT* M235T genotypes were determined by polymerase chain reaction followed by digestion of the products with restriction endonuclease, *Tth111I*. In this study, there was statistically significant association with essential hypertension that identified for TT genotype of M235T polymorphism [OR= 4.93 (95% CI) 1.97 to 12.37]. The frequency of homozygous TT genotype was more common in hypertensive than normotensives. The difference was statistically significant ($\chi 2 = 13.3$, $p=0.000309$). The odd ratio for hypertension with subjects carrying "T" allele was [OR= 2.56 (95% CI) 1.59 to 4.13]. In this study, the mean plasma angiotensinogen level of hypertensive was 65.00±27.73 ng/ml whereas those of normotensives were 24.87±15.06 ng/ml. The mean plasma angiotensinogen level of hypertensive was significantly higher than those of normotensives ($p < 0.001$). Moreover, patients carrying TT genotypes have the higher level of plasma angiotensinogen level than other genotypes MT and MM ($p=0.005$ and $p < 0.001$) in both hypertensive and normotensives. This study shows that *AGT* M235T polymorphism is significantly associated with the essential hypertension. Therefore, this study gave information that *AGT* M235T is an important gene for determining susceptibility to essential hypertension. By studying the *AGT* M235T gene, subjects with risk allele carrier have higher plasma angiotensinogen level and increased risk to essential hypertension in Myanmar.

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Association between the time of length since smoking cessation and insulin resistance in asymptomatic Korean male ex-smokers

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Aim: Smoking is a major risk factor for diabetes mellitus, mainly due to decreased insulin secretion and increased insulin resistance. However, there has been little research on the effects of smoking cessation period on changes in insulin resistance. In this study, we investigated the relationships between the length of time since smoking cessation period and insulin resistance in asymptomatic Korean male ex-smokers.

Methods: 851 male adults were included in this study. We considered several factors that can affect insulin resistance and, through multiple linear regression analysis, we assessed the effect the length of time since smoking cessation on insulin resistance in ex-smokers. Insulin resistance was represented as the insulin resistance index estimated by homeostasis model assessment (HOMA-IR).

Results: HOMA-IR values showed a statistically significant negative correlation with the length of time since smoking cessation (p=0.009) in ex-smokers and high-density lipoprotein cholesterol (p=0.003). After performing multiple linear regression analysis using factors that could potentially influence insulin resistance, we found that waist circumference (p=0.026) and the length of time since smoking cessation (p=0.039) were independent predictors of HOMA-IR in asymptomatic male ex-smokers.

Conclusion: The longer the smoking cessation period, the more the insulin resistance tended to decrease in asymptomatic Korean male ex-smokers.

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Approach to the heart patient – appropriate selection of tests and tools

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Despite the vast selection of medical tests and tools, patient satisfaction and rate of treatment success has not been as significant as anticipated. Beside the human error, one reason is that we use technique much too often before we examine the patient or listen to his/her history. Tests and tools are very important, but only successful when we know what to do with the result. Another issue bothering many patients in clinical practice is the fact that despite the patient not feeling better, many doctors emphasize this being impossible, because results based on technical examinations show improvement. In this presentation, data and cases will be presented to enlighten the diagnostic path and the useful utilization of tests and techniques in cardiology on the way to improve patient care in cardiology

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Role of 2-dimensional speckle tracking echocardiography in improving diagnosis of coronary artery stenosis in stable angina pectoris patients

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Background: Conventional echocardiography at rest provides little information regarding the presence of coronary artery disease (CAD), longitudinally orientated myocardial fibers are located subendocardially, the area most susceptible to ischemia, that is why measurements of longitudinal motion and deformation may be the most sensitive markers of CAD using (2DSE) The aim of this study was to determine if 2DSE performed at rest can enhance the sensitivity of exercise test and if it can predict the presence of CAD in patients with stable angina pectoris.

Methods: The study includes (120) subjects suspected to be stable angina pectoris patients presented for evaluation of chest pain at Al-Hussein University Hospital – Al-Azhar University – Cairo – Egypt between December 2013 and December 2015, the patients were classified according to coronary angiography results in to two groups:

Group (A): 40 patients with normal coronary angiography as a control subjects.

Group (B): 80 patients with significant coronary artery disease.

Results: There was statistically significant difference between the two groups as regard E wave, A wave, E/A ration, DT, Em and E/Em, there was statistically significant difference between the two groups as regard SLSS and GLS 17 and GLS 12, there was statistically significant difference between the two groups as regard SLSr and Sr17and Sr 12, there was statistically significant difference between the two groups as regard ST segment deviation during stress ECG, exercise capacity (METs) and Duke Score; in this study we found that strain parameters at BA, BAS, MA, MIS, MAS, AI and AL segments were found to be significant predictor of LAD stenosis and BP, MP were found to be significant predictor of LCX stenosis and BI was found to be predictor of RCA stenosis, also we found that strain rate parameters at BA, MA, MAS, AI, AL and apex segments were found to be significant predictor of LAD stenosis. BL, BP and ML were found to be significant predictor of LCX stenosis and BI, MI were found to be predictor of RCA stenosis, the diagnostic performance of the exercise test was significantly improved by GLS17 in terms of a significant increased AUC for the exercise test in combination with GLS17

Conclusion: In patients with suspected SAP, GLS assessed by 2DSE at rest is a predictor of significant CAD and significantly improves the diagnostic performance of exercise test, and capable of identifying which coronary artery is stenotic.

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Persistent albuminuria as a surrogate marker of chronic kidney damage among newly diagnosed hypertensives: Prevalence and risk factors in an urban population in Karachi, Pakistan

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Background: Hypertension is a major public health problem worldwide and a key factor for chronic kidney disease (CKD). Detection and treatment of CKD is of paramount importance. Albuminuria is one of the earliest screening markers recommended in patients at increased risk for CKD.

Objective: We conducted this study to determine the prevalence of persistent albuminuria (PA) in newly diagnosed hypertensive subjects and to study its associated risk factors.

Methods: A total of 173 (72%) of 240 subjects among 1340 newly diagnosed hypertensive subjects from an ongoing community-based cohort study who had been screened once for the presence of albuminuria were retested for the presence of PA in this study. Urinary albumin concentration (UAC) in mg/L and albumin-to-creatinine ratio (ACR) in mg/g creatinine were determined in a spot morning urine sample by Nephelometry.

Results: The prevalence of PA signifying CKD was 9.3% with 95%confidence interval (CI) of 7.8–10.8%by UAC and 8.1% by ACR method (95%CI: 6.6–8.4%). Subjects with persistent albuminuria had mean age of 56.4 ± 11.4 years and 50% were males. Factors independently associated were male gender (odds ratio [OR], 1.92 (95% CI: 1.24–2.97)) and age less than 55 years with positive family history of kidney disease (OR, 15.51; 95% CI: 7.35–32.97). Among measurable variables, high cholesterol levels ($p = 0.001$), and progressively higher levels of systolic blood pressure ($p < 0.001$) were associated with risk of PA.

Conclusion: Hypertensive kidney damage is already present in a significant number of newly diagnosed hypertensives suggesting late detection of hypertension.

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Associations between serum zinc levels and mental health: Findings from the 2010 Korean National Health and Nutrition Examination Survey

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Background: Mental health problems are a major public health issue worldwide, and zinc may be associated with psychiatric symptoms, but such associations have not been investigated extensively. This study was conducted to evaluate the relationship between serum zinc levels and mental health problems in Korean adults.

Methods: We used data from the Korean National Health and Nutrition Examination Survey V-1, a cross-sectional survey of Korean civilians. Data from 1,748 subjects were analyzed.

Results: Serum zinc levels did not differ significantly according to psychiatric symptoms, including sleep duration, stress, depressed mood, suicidal ideation, and whether respondents sought psychiatric consultation. The frequencies and odds ratios of psychiatric symptoms according to serum zinc tertiles were not significantly associated after adjusting for age, smoking, alcohol consumption, physical activity, body mass index, total body fat, and renal function and for daily fat, carbohydrate, and protein intake.

Conclusion: Serum zinc levels may not be associated with psychiatric symptoms in Korean adults without psychiatric disorders.

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Body Mass Index and frequency of hypertension

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Statement of the problem: Among various risk factors of hypertension, obesity is considered one of its causes with different mechanisms leading to high blood pressure affecting diastolic more than systolic BP.

Methodology: A cross sectional study was performed in the urban areas of Peshawar KP, Pakistan. A total of 2548 participants, of either gender or age above 18 years were randomly recruited from various occupational groups of Peshawar heart study (PHS) and data collected. Subjects were divided into obese and non-obese based on BMI. Participants with BMI of 25 and above were taken as obese and those less than 25 were considered non-obese. Systolic and diastolic blood pressures were defined based on published guidelines. Pearson Ranked correlation (Y) was used to determine correlation between the variables.

Findings: Of the total study population, 1015(39.6%) were non-obese and 1533(60.4%) were obese. In non-obese group, 16.7 % of individuals had systolic hypertension and 25.7 % had diastolic hypertension. In obese group, 36.3% had systolic hypertension and 51.1% had diastolic hypertension. Mean systolic BP in non-obese was 120.8±32.7 mmHg (80-220) while it was 130.7±38.2 mmHg (80-230) in obese subjects. Mean diastolic BP was 78.8±18.9 mmHg (50-130) in non-obese while it was 85.7±20.1 mmHg (50-140) in obese individuals. Pearson Rank Correlation (Y) was weakly positive, i.e. +0.2.

Conclusion and significance: Systolic and diastolic hypertension has weak positive correlation with obesity.

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Determinants of cardiac ejection fraction for the patients with Dobutamine Stress Echocardiography

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Objectives: This article aims to identify the determinants of the baseline cardiac ejection fraction, and the ejection fraction on Dobutamine dose of 558 heart patients who underwent Dobutamine stress echocardiography (DSE).

Background: There is less information known about the determinants of ejection fraction with DSE.

Methods: The response ejection fraction is positive, heterogeneous, and gamma distributed, so joint generalized linear gamma models fitting is used.

Results: The baseline cardiac ejection fraction (baseEF) increases with the increased of peak heart rate (pkhr) (P=0.0247), systolic blood pressure (sbp) (P=0.0007), ejection faction on Dobutamine (dobEF) (P<0.001). The baseEF decreases with the increased of double product (DP) of peak heart rate & systolic blood pressure (sbp) (P=0.0017) and Dobutamine dose given (dose) (P=0.0255). The baseEF increases of the cardiac patients who underwent DSE having recent angioplasty (newPTCA) (P=0.0101), history of myocardial infraction (hxofMI) (P=0.0658), and baseline electrocardiogram diagnosis (ECG) at normal level (P=0.0555). The baseEF increases of the cardiac patients with DSE not having resting wall motion abnormality on echocardiogram (ECDG) (restwma) (P=0.0003), positive stress echocardiogram (posSE) (P<0.001), history of PTCA (hxofPTCA) (P=0.0384). On the other hand, the ejection fraction on Dobutamine dose (dobEF) increases with the increased of (DP) (P=0.0007), (dose) (P=0.0110), (baseEF) (P < 0.001), and it decreases with the increased of (sbp) (P=0.0012). The dobEF increases of the cardiac patients with DSE having (posSE) (P<0.001), new myocardial infraction (new MI) (P=0.0054), recent bypass surgery (new CABG) (P=0.0049), and it increases of the cardiac patients with DSE not having (new PTCA). In addition, the dobEF decreases of the cardiac patients with DSE having heavy history of smoking (hxofCig) (P=0.0261).

Conclusions: Impacts of pkhr, basal blood pressure, sbp, mbp, Dobutamine dose, heart conditions, heavy smoking and others on baseEF and dobEF have been identified based on probabilistic Modelling. Most of the present findings and their effects are almost new in the cardiac ejection fraction diagnosis literature.

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Algorithms of respiratory failure and shock guided by ultrasound in critical units

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Introduction: Doppler echocardiography (TEE) and pulmonary ultrasonography (PE) have become basic tools with the highest level of recommendation in the patient in shock and in the patient with respiratory insufficiency. However, there is no algorithm with a high level of sensitivity and specificity for the differential diagnosis of both in critical areas. The BLUE, FATE and FALLS protocols are very focused on initial diagnosis in emergency areas.

Method: We propose, from ECOCRITIC, algorithms for the management of shock and dyspnoea by performing ETT and EP. In order to study the patient in shock, 5 Doppler echocardiography chambers with evaluation of mitral E wave and Tissue Wave (to assess left ventricular preload), v. systolic in left ventricular outflow tract, maximum valve velocity Aortic, indirect calculus of peripheral resistences, left and right contractility, discard pericardial dermis, discard pleural effusion by exploring axillary windows and pneumothorax by pulmonary ultrasound. For the respiratory insufficiency, the left ventricular preload is also measured in 5 ETT chambers, the axillary windows to rule out atelectasis / pleural effusion and to evaluate the diaphragmatic excursion (ED), the distribution in both hemitorax of the existing pulmonary pattern along the aspect of the anterior pleural line.

Conclusion: These algorithms allow to diagnose and guide in the treatment of the causes of the 2 most important syndromes in the critical units: shock and respiratory failure.

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Effect of yoga on cardiovascular autonomic activity and reactivity in essential hypertensive patients

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The exact cause of essential hypertension (EH) remains unknown. However, sympathetic hypertonicity, stress and stress-induced vasoconstrictor hormones are associated as major causes. EH may lead to myocardial infarction, stroke. Thus, EH patients have to take long-term therapy. Despite, long-term normalization of blood pressure by anti-hypertensive drugs, there exist autonomic dysfunction. Yoga known to decrease BP in EH patients, however, it is not much clear whether combined easy yogic practices improve cardiovascular autonomic regulation in EH patients. Thus, we studied the effect of yoga on cardiovascular activity and reactivity in EH patients. The study included 40 essential hypertensive patients. They were randomized into yoga (n=20, age 46.71±8.79 years) and control (n=20, age 44.8±7.47 years) groups. Yoga group practiced meditation, pranayama and few easy asanas for 40 min/day for one month. Control group did not practice yoga or any relaxation procedures. Cardiac autonomic activity was assessed using short-term heart rate variability (HRV) and reactivity using deep breathing (DBT), Valsalva Maneuver (VM), Handgrip (HGT) and Lying to standing (LST) tests in both groups at zero and after one month. Institutional Ethical Committee approved the study. Both groups had comparable age, height, weight, BMI, SBP, DBP, HR, and respiratory rate. SBP, DBP, HR, and BMI decreased in yoga group after one month of yogic practice. Time domain measures of HRV, which are markers of cardiac parasympathetic activity [SDNN: 29.8.9(18-33.9) vs 35.2(26.87-38.8) ms, p=0.013; rMSSD: 13.5(11.5-21.86) vs 37.4(30.9-43.3) ms, p=0.001] increased in yoga group as compared to control group after yoga. E:I ratio and Valsalva ratio, which are indicators of parasympathetic reactivity also increased in yoga group. Both parasympathetic activity and reactivity increased in EH patients after a month of yoga practice. It indicates that yoga increases cardiac autonomic modulation by increasing cardiac parasympathetic activity, which is better for cardiac health.

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Echocardiography and advanced imaging techniques for cardiovascular screening in athletes – state of the art

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Professional and amateur athletic training can cause tremendous overload of the cardiovascular system and thus become a trigger for fatal cardiac events in athletes with previously undetected underlying heart diseases. In recent years there are more and more press reports on cases of sudden cardiac death in young athletes during sport events. Very intensive athletic training may induce adaptative changes in the structure and function of heart as observed on echocardiography and electrocardiography (ECG). However, these physiologic changes referred to as the "athlete's heart" may coincide with structural cardiac disease and also be a cofactor for dramatic deterioration of clinical status in a certain group of athletes. Subsequently, every athlete should undergo a sophisticated diagnostic and qualification screening process before a training program is prescribed or continued. However, it is still unresolved issue which of the diagnostic tools should be routinely applied to increase the safety of extreme physical training and reduce the risk of sudden cardiac death. Pre-participation athlete evaluation including resting electrocardiography (ECG), physical examination and familial history of cardiovascular diseases is important, but does not always guarantee high diagnostic accuracy. Hence, the complex and reliable evaluation of cardiovascular health status in athletes or athlete candidates should include not only ECG and exercise testing, but also echocardiography and in some cases more advanced imaging techniques such as cardiac magnetic resonance or cardiac computed tomography.

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