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Behavioural and electrophyasiological responses in neuropathic pain model of spared nerve injury in the male adult rats

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Abstract

Background and Aim: Damage to neural pathways is one of the most significant factors of neuropathic pains, which is characterized by spontaneous burning pain accompanied by allodynia and hyperalgesia. The present study was carried out to explore behavioral and electrophysiological characteristics of neuropathic pain model of Spared Nerve Injury (SNI).

Materials and Methods: In this experimental study, male Sprague-Dawley rats (wt: 230-280 Gms.) were used. Anesthesia was initially induced with sodium pentobarbital (ip) at a dose of 50 mg/kg. Then, SNI surgery operation was performed on them. The animals were tested for their behavioral responses shown as heat and mechano-allodynia; and heat and mechano-hyperalgesia prior to the surgery ("0" day), and on the 3rd, 7th, 14th, 21st and 28th day post-operation. Electrophysiological responses by the sciatic nerve were recorded two weeks after the operation. Stimulation of the sural nerve branch and proximal area of auxotomized nerve were recorded proximally. Repeated ANOVA and one-way ANOVA statistical softwares were applied to the results of behavioural testing and electrophysiological responses, respectively. \( P < 0.05 \) was considered as the significant level.

Results: Compared to the control group, the rats in the SNI group revealed an obvious difference in their behavioral responses towards heat and mechano-stimulation manifested by allodynia and hyperalgesia, respectively \( (P<0.05, P<0.01) \). Conduction velocity (CV) significantly reduced in SNI rats compared to the control group \( (P<0.05) \). Amplitude also slightly decreased in the SNI group. Compound action potential (CAP) rising time was similar in both SNI and the control animals.

Conclusion: SNI models showed acute behavioural responses to both thermal and mechanical allodynia and hyperalgesia stimuli. Besides, electrophysiological recordings of the nerve confirmed nerve damage and injury due to this model, which caused a decrease in nerve conduction.

Key Words: Neuropathic pain; Allodynia; Hyperalgesia; Electrophysiological responses SNI model

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Effects of feeding Alfalfa on lipoproteins and creating fatty streaks in hypercholesterolemic rabbits

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Abstract

Background and Aim: Cardiovascular diseases are still the leading cause of mortality in most of the countries in the world. Alfalfa (Medicago sativa) is a legume that because of its high nitrate and vitamin compounds and its high phytoestrogen and saponin level may be useful for the prevention of cardiovascular disorders. The current study was designed to evaluate the effect of alfalfa in the prevention and progression of atherosclerosis.

Materials and Methods: In this experimental study, twenty white male rabbits were fed on basic diet for 2 weeks and were then randomly divided into 4- five-member groups. The first group was fed on basic diet, the second were fed on 1% high cholesterol diet, the third group was fed on basic diet plus alfalfa, and the fourth group was fed on high cholesterol plus alfalfa diet for 12 weeks. Fasting blood samples were collected from rabbits at the start and end of study and were used to measure biochemical factors such as total cholesterol, HDL, LDL, triglyceride, and fasting blood sugar. At the end of the study, autopsy samples from right and left coronary arteries; and aorta were evaluated for pathological examinations. The obtained data was analyzed by means of SPSS using ANOVA test at P<0.05 as the significant level.

Results: Consumption of alfalfa together with cholesterol by one group can decrease total cholesterol, LDL Cholesterol, triglyceride; and increase HDL cholesterol level compared with high cholesterol diet. Formation of fatty streaks in the aorta, right coronary and left coronary arteries significantly reduced; following high cholesterol plus alfalfa diet as compared with high cholesterol alone diet.

Conclusion: Our study showed that alfalfa is effective on the prevention and progress of fatty streaks, but in order to find the exact mechanism of the process more studies are warranted.

Key Words: Atherosclerosis; Phytoestrogen; Alfalfa; Rabbit; Lipoprotein; Hypercholestromia

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Evaluation of the uterine artery resistance index by doppler ultrasonography in pregnant women with chronic hypertension

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Abstract

Background and Aim: Uterine placental bloodstream pressure can be measured by doppler ultrasonography, which is a non-invasive technique. Uterine arteries velocimetry progressively decreases during the first and second trimesters in normal gestation; due to trophoblastic invasion of musculoelastic membrane of uterine spiral arteries. The relationship between trophoblastic invasion and placental resistance index can be helpful in predicting gestation outcome; intrauterine growth retardation in particular. The aim of this study was to measure the significance of uterine artery resistance index in predicting maternal and fetal complications in pregnant women with chronic hypertension.

Materials and Methods: Uterine artery velocimetry was investigated between 28 and 32 weeks after gestation in 67 chronic hypertensive pregnant women by means of colour Doppler sonograph. Resistance index (RI) was recorded and its relationship to the development of superimposed pre-eclampsia (SPE), pregnancy aggravated hypertension (PAH), and intrauterine growth retardation (IUGR) was surveyed. The obtained data was analysed employing SPSS using Fisher accurate test; and P≤0.05 was considered as the significant level.

Results: There were more pregnancy complications in 21 patients with abnormal RI compared with 46 patients with normal RI (SPE 43% vs. 6.5%, PAH 24% vs. 4.3%, and IUGR 71% vs. 4.3%).

Conclusion: Uterine artery Doppler velocimetry helps to identify a subgroup of chronic hypertensive patients with a high frequency of pregnancy complications.

Key words: Uterine artery, Doppler ultrasonography, hypertension, Pregnancy

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Determination of the best anthropometric index for predicting of lipid profile in Zahedanian overweight and obese women

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Abstract

Background and Aim: Although several studies have been conducted about the effectiveness of general and central obesity anthropometric indices on lipid profile, a few surveys are available concerning their relationship. As the determination of the best anthropometric index for the prediction of lipid profile in any population is necessary, the current study was carried out to find out the best anthropometric index in overweight and obese adult women in two nutrition clinics of Zahedan.

Materials and Method: In a clinical cross sectional study, 728 overweight and obese women aged between 20 and 60 years, who had referred to the two nutrition clinics in Zahedan from July 2005 to May 2006, were investigated. Height, weight, waist circumference (WC) and hip circumference (HC) of the subjects were obtained and then BMI (body mass index) -as general obesity index- and WHR (waist hips ratio) and WC (as central obesity indices) were measured according to standard protocols. Individual data was collected by means of a questionnaire for each subject. TC (total cholesterol), TG (triglyceride) and HDL-C were enzymatically measured. The LDL-C was calculated according to Fried Wald Equation. The obtained data was analyzed employing Pearson correlation coefficient and Z-test for Fisher's zeta transformation and P≤0.05 was considered as the significant level.

Results: Mean age of the women was 32±9 years and their mean BMI, WHR, WC, and HC were 32±3.5, 0.89±0.13, 99.8±12 and 111±11, respectively. There was a positive significant correlation between BMI with age (r=0.17, P<0.001), WHR (r=0.11, P<0.003), WC(r=0.49, P<0.001) and HC (r=0.45, P<0.001). Similar results were obtained regarding the correlation between WC with age, WHR, and HC. There was not any significant statistical correlation between WHR and HC with age. Pearson correlation coefficient revealed that, with the exception of HDL-C, BMI and WC indices showed positive significant correlation with TC, TG and LDL-C concentration .Such a correlation was not found for WHR and HC indices. After adjustment to age and BMI, the same results were also held especially for TC (r=0.1, P<0.01) and TG (r=0.1, P<0.001) with WC index. There was not any significant correlation between WHR and HC indices with all of the studied variables after adjustment to age and BMI.

Conclusion: According to the results, WC is a better anthropometric index for the prediction of lipid profile than WHR in overweight and obese women in Zahedan. However, more studies in this domain are recommended.

Key Words: Anthropometric indices; Lipid profile; Overweight; Obese; Zahedan

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Study of shigella genera and their drug resistance in dysenteric patients

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Abstract

Background and Aim: Bloody diarrhea (dysentery) is one of the acute gastrointestinal diseases and Shigellosis is an important cause of it in our country. Variety of its causing agents (Shigella strains) and occurrence of drug resistance have made troubles in selecting of appropriate antibiotics for the treatment of shigellosis. The current study was aimed at identifying different strains of shigella and assessing their drug resistance in the urban and rural regions of Nehbandan.

Materials and Methods: In this quasi experimental study 140 patients presented with acute bloody diarrhea referring to the rural and urban health centers and health houses of Nehbandan were studied. Their stool samples were cultured and underwent antiobigram tests after being carried to a Birjand medical diagnostic laboratory. Cultures were prepared according to WHO standard protocols on Eosin Methylene Blue (EMB) and Shigella - salmonella agar (SS) media. Drug susceptibility was done using disk diffusion method. The obtained data was analyzed by Chi-square and Fisher test, and P≤0.05 was considered as the significant level.

Results: 35 (25%) out of 140 patients were positive regarding shigellosis. The most frequent shigella serotypes were shigella Flexneri in 30 cases (85.7%), shigella Boydii in 4 cases (11.4%) and shigella Sonnei in 1 case (2.9%). All shigella strains were sensitive to Ciprofloxacin and Nalidixic acid, but 85.7% to Cefixime. Only 20% of shigella strains were sensitive to Co-trimoxazole.

Conclusion: According to the study, using Nalidixic acid is recommended as the first line of treatment in shigellosis due to low price, few side effects and availability in health centers.

Key words: Dysentery; Shigellosis; Shigella; Drug resistant; Antibiotic

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Determination of diabetic- polyneuropathy prevalence through clinical examination and electrodiagnostic findings

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Abstract

Background and Aim: Polyneuropathy is one of the most common complications of type 2 diabetes mellitus. Clinical examination and electrophysiological findings (i.e., nerve conduction velocity) will not only provide an accurate diagnosis of neuropathy but will also help the physician in preventing and treating the disorder. The aim of the current study was to determine the prevalence of neuropathy as well as the validity of the clinical scoring system in detecting the presence and severity of diabetic peripheral sensorimotor polyneuropathy-as confirmed by nerve conduction velocity.

Materials and Methods: In this cross-sectional study conducted at the diabetic center affiliated to Isfahan University of Medical Sciences, 446 Patients were evaluated by two neurologists and two residents. Through neurologic examination all patients were classified into four categories; namely patients with no neuropathy, mild neuropathic ones, those with moderate neuropathy, and cases suffering from severe neuropathy. A number of patients with moderate and severe neuropathy were tested for nerve conduction velocity. All of the obtained data was analyzed by SPSS using Chi-square statistical test at the significant level of $P \leq 0.05$.

Results: Sensorimotor polyneuropathy was clinically diagnosed in 77.4% of the cases, mild polyneuropathy in 47.98%, moderate neuropathy in 25.78%, and severe polyneuropathy in 3.59%. 22.65% of the subjects were not affected by neuropathy. Nerve conduction velocity was assessed in 62 patients with moderate and severe neuropathy; the results showed high correlation with the neurological scoring system ($P<0.05$).

Conclusion: The prevalence of sensorimotor neuropathy is relatively high in our catchment area (Isfahan). Moreover, the clinical scoring system is a valid tool in early diagnosis of neuropathy in which the primary caregiver would be able to realize diabetic complications such as pain in the limbs, foot ulcer, and syncopal attack.

Key Words: Diabetic polyneuropathy; Physical examination; Electrophysiological test

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