3. Department of Community Health Nursing, Deputy of Research and Technology, Kurdistan University of Medical Sciences, Sanandaj, Iran
4. Neuroscience Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Background and Aim: The aim of this study was to assess the locations of the conus medullaris, meninges and spinal position in adult patients referring to Shahid Chamran MRI center in Sanandaj, Iran, to find the relationship between those locations with age and sex, weight and height and to verify a guide for a safe approach to the correct intervertebral space during spinal block.

Methods: Magnetic resonance imaging of the lumbar spine were studied in 300 patients referring to Shahid Chamran MRI center in Sanandaj, Iran. The study population consisted of patients older than 18 years who had been referred for imaging to assess likely causes of low back pain. The location of the conus medullaris was defined as the most distal point of the cord that could be visualized on the sagittal sequence. A vertical line to the long axis of the cord was extended to the adjacent vertebra. Each vertebral body and intervertebral space was divided into four segments: upper, middle, and lower thirds of a vertebral body, and the intervertebral space. Data were analyzed using statistical analysis such as Chi-Square, Kruskal Wallis Test and ANOVA.

Results: The conus medullaris, meninges and spinal position showed no significant relationship with sex, age, weight and height.

Conclusion: There is a safe region of 2–4 vertebral bodies and intervertebral spaces during spinal block which has no statistically significant difference according to sex, age, weight and height.

Keywords: Conus Medullaris, Spinal position, Meninges, physical characters, MRI.

Effect of regular exercise on the brain-derived neurotrophic factor levels in the hippocampus of sleep deprived female rats

Subject: Sleep

Hakimeh Saadati[1], Vahid Sheibani[2], Saeed Esmaeili-Mahani[3], Fatemeh Darvishzadeh -Mahani[4], Shahrzad Mazhari[5]

1. Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran
2. Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran
3. Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran
4. Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran
5. Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran

Background and Aim: In our previous study, we found that regular exercise has preventive effects on cognitive and synaptic plasticity impairments induced by sleep deprivation in the intact and particularly ovariectomized (OVX) female rats. The aim of the present study was to investigate the effects of treadmill exercise and/or PSD (paradoxical sleep deprivation) on levels of brain-derived neurotrophic factor (BDNF) mRNA and protein in the hippocampus of female rats.

Methods: Intact and ovariectomized female Wistar rats were used in the present study. Exercise protocol was four weeks treadmill running and sleep deprivation was accomplished using the multiple platform method. Quantitative reverse transcriptase-polymerase chain reaction (RT-PCR) and immunoblot analysis were used to evaluate the levels of brain-derived neurotrophic factor (BDNF) mRNA and protein in the hippocampus of female rats respectively.

Results: Our results showed that, protein and mRNA expression of BDNF was significantly (P?0.05) decreased after 72h PSD in ovariectomized female rats in compared with other groups. Therefore, the significant down- regulation of the BDNF protein and mRNA in the sleep deprived OVX female rats was prevented by regular treadmill exercise.

Conclusion: These findings suggest that regular exercise exerts a protective effect against hippocampus related functions impairments induced by sleep deprivation probably by inducing BDNF protein and mRNA expression.

Keywords: Paradoxical sleep deprivation, Brain derived neurothrophic factors, Physical exercise, Female rat

Beneficial and Adverse Roles of Nitric Oxide in Development of Nervous System

Subject: Neurodevelopmental Disorders

Sima Sabbagh[1], Leila Dehghani[2]

1. Isfahan Neurosciences Research Center, Al-Zahra hospital, Isfahan University of Medical Sciences, Isfahan, Iran
2. Isfahan Neurosciences Research Center, Al-Zahra hospital, Isfahan University of Medical Sciences, Isfahan, Iran

Background and Aim: Nitric oxide (NO) has been identified as a crucial biological signaling molecule in the cardiovascular, nervous, and immune systems. In addition, critical level of NO is essential for Implantation and embryo's development. NO is known as a gaseous messenger in the nervous system. It plays a role in synaptic plasticity, but also in development and regeneration of nervous systems. Nitric oxide synthase (NOS) isoforms produce nitric oxide (NO), which is of vital importance in physiological processes as well as for pathology and recovery in various diseases.

Methods: NO also possess important roles in embryonic development and plasticity changes in later life. It is described that the spatio-temporal expression of NOS I in relation to the neurotransmitter/hormone differentiation during early development, and present new data about the establishment of NOS I expression in areas of the adult brain with ongoing neurogenesis. There is also further evidence for the influence of NO on early organogenesis, demonstrated by abnormal organ development caused by manipulation of NO systems in embryos.

Results: There is substantial evidence that the intra- and intercellular messenger nitric oxide, generated enzymatically from L-arginine by nitric oxide synthase in different isoforms, is involved in the