Human Anatomy and Embryology

Statin-induced myopathy in muscles of lower limb with special reference to gastrocnemius muscle in albino rats

K. Fares, H. Abd-El-Hamid, A. Youssef and M. Rafla
From the Human Anatomy and Embryology Department, Faculty of Medicine, Ain Shams University
kero_pop2313@yahoo.com

Background: Muscular adverse effects are the most commonly reported adverse effects of statins. These range from muscle weakness, fatigue, pain, to rhabdomyolysis.

Aim of the work: To study the histological and immunohistochemical changes in gastrocnemius muscle after administration of rosuvastatins and to observe the recovery of these effects after discontinuation of the drug in male albino rats.

Material and methods: 44 rats were divided to 5 groups. Group I: Control group. Group II: received rosuvastatin daily for 8 weeks. Group III: received rosuvastatin for 8 weeks and stopped for 2 weeks. Group IV: received rosuvastatin for 8 weeks and stopped for 4 weeks. Group V: received rosuvastatin for 8 weeks and stopped for 6 weeks. At the end of the experiment, the gastrocnemius muscle of the right limb was obtained and prepared for histological and immune-histochemical staining and examined by light microscopy.

Results: Examination of muscle sections from group II & III showed variation in the fiber size. Most fibers appeared hypertrophied with ill-defined outlines, splitted and showed fragmentation of their sarcoplasm with Pale acidophilic sarcoplasm. There is loss of striations, inflammatory cellular infiltration, and wavy appearance of myofibrils. The nuclei appeared dense, rounded and central instead of peripheral position surrounded by satellite cells. These findings indicate degenerative changes that may lead to myopathy. On the other hand, group IV and V showed inflammatory infiltration, presence of satellite cells, few areas of sarcoplasm fragmentation, Chains of fibroblasts and vascular congestion. Most fibers are more basophilic, the nuclei are multiple and centrally located. Few myofibrils still showing splitting.

Conclusion: The use of rosuvastatins in rats caused myopathy that was partially reversed by discontinuation of statin.

The protective effect of pretreatment with high dose Atorvastatin in contrast induced nephropathy in male albino rats, ultrastructure study

A. Ali, M. Rafla, H. Mahmoud, N. Ebrahim El-Nefiawy, Youssef Shoukry and A.F. Al-Neklawy
From the Human Anatomy and Embryology Department, Faculty of Medicine, Ain Shams University
dr_amalhassem@yahoo.com

Background: Contrast induced nephropathy (CIN) is the third leading cause of hospital acquired acute renal failure. Till now, there is no universally accepted method for preventing contrast induced nephropathy, except for extracellular volume expansion.

Aim of the work: To study the possible protective role of pretreatment with high dose atorvastatin on urografin induced nephropathy in male albino rats.

Material and methods: 40 rats were divided to 4 groups. Group I: Control group. Group II: Dehydration group. Group III: Dehydration and contrast media group. Group IV: Statin pretreatment. At the end of the experiment, blood samples were obtained from rats and kidney specimens were collected for semithin and ultrathin sections and examined by light and electron microscopy.

Results: light microscopic examination of renal sections from group III showed homogenous material deposition in Bowman’s space. Electron microscopic examination showed significant thickening of the glomerular basement membrane with marked distorted foot processes and narrowing of the filtration slits. There was a significant increase in the serum creatinine, BUN and interleukin 6 when compared to the control group. On the other hand, group IV showed less tubular damage and vasculations and marked reduction in tubular cast. Thickening of the glomerular basement membrane, serum creatinine, BUN and interleukin 6 were much less in comparison to group III.

Conclusion: The use of contrast media in dehydrated rats caused severe histopathological alterations in the renal tissues and the renal function, these changes were successfully prevented by pretreatment with high dose statin.

The effect of sildenafil citrate administration on albino rat cerebellar cortex

K.N. Hamdy, H.M. Mahmoud, Reham Fathy Tash, Hany W. Abdel Malak, E.A. Bekheet and M.E. Elnaggar
khalednaiem@med.asu.edu.eg

Background: Being a major social and medical problem, sexual dysfunciton may occur in both sexes. Sildenafil citrate (Viagra) is a selective inhibitor of phosphodiesterase 5 which is present in both vascular tissue and brain, mainly cerebellum. Inhibition of phosphodiesterase 5, causes increased blood flow in the ischemic areas. Cerebellum contributes to coordination of movements and some cognitive functions as attention and language.

Aim of work: to clarify the histopathological effects of sildenafil citrate on the cerebellar cortex of adult male albino rats.

Material and Methods: 24 adult male albino rats (weighing 200-250 grams) were divided into four groups: Control and three treated groups receiving low dose (0.25 mg/kg), intermediate dose (0.7 mg/kg) and high dose (1.43 mg/kg) of sildenafil citrate dissolved in distilled water daily via orogastric feeding tube for 30 days. At the end of experiment, cerebellar cortices were processed for light microscopy, GFAP immunostaining and transmission electron microscopic examination.

Results: In low dose treated group, cerebellar cortical architecture was preserved, but partially congested and dilated vessels were noted in molecular and purkinje cell layers, with hemorrhage in-between folia. In rats treated with 0.7 mg/kg dose, most of Purkinje cells appeared irregular, deeply stained with ill-defined nuclei, patchy mitochondria and many lysosomes. In high dose treated group, diffuse vacuolation, shrunked deeply stained purkinje cells with pyknotic nuclei were observed. An increase in GFAP immunoreaction (indicating astrocytosis) was