Human Anatomy and Embryology

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

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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

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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 vacuolations 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

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Background: Being a major social and medical problem, sexual dysfunction 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 hemorraghe in-between folia. In rats treated with 0.7 mg/kg dose, most of Purkinje cells appeared irregular, deeply stained with illdefined nuclei, patchy mitochondria and many lysosomes. In high dose treated group, diffuse vacuolation, shrunken deeply stained purkinje cells with pyknotic nuclei were observed. An increase in GFAP immunoreaction (indicating astrocytosis) was
noted in all layers of the cortex in both intermediate and high doses treated groups.  

**Conclusion:** Sildenafil citrate caused hyperaemia and increased cerebellar blood flow in low dose and neurodegeneration with reactive astrogliosis within cerebellar cortex in high doses.

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**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 rosuvastatin 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 immunohistochemical 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 rosuvastatin in rats caused myopathy that was partially reversed by discontinuation of statin.

**Effect of fenugreek seed extract (Trigonella foenum-graecum) in letrozole induced polycystic ovary syndrome in female albino rat**  
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Polycystic Ovary Syndrome (PCOS) is the most common endocrinopathy in women of reproductive age leading to irregular menses, hirsutism, insulin resistance and infertility. Fenugreek (Trigonella foenum-graecum) is an important medicinal agent that has antidiabetic and antiandrogenic properties. This study aims to evaluate the effect of fenugreek seed extract in Letrozole induced PCOS in female albino rat. Thirty adult female albino rats were divided into five groups (six rats each): **Group 1** (Control group) received no medication. **Group 2** received vehicle only (oral doses of 2 ml/kg body weight of 1% aqueous solution of Carboxy Methyl Cellulose once/day for 21 days). **Group 3** (Fenugreek treated group): received oral doses of 100 mg/kg body weight fenugreek seed extract once/day for 21 days. **Group 4** (Letrozole treated group): received Letrozole orally at a dose of 1 mg/kg dissolved in 1% (CMC) once/day for 21 days. **Group 5** (Letrozole + Fenugreek treated group): received Letrozole orally at a dose of 1 mg/kg dissolved in 1% (CMC) once/day for 21 days. Then rats were supplemented with oral doses of 100 mg/kg body weight fenugreek seed extract once/day for another 21 days. At the end of the experimental period, all animals were sacrificed and both ovaries were excised and specimens were processed for light microscopic examination. Our results revealed that group 4 showed picture of polycystic ovary in the form of multiple ovarian cysts with a diminished granulosalayer, atretic follicles and a few number of corpora lutea. This picture was reversed after Fenugreek supplementation, there was marked improvement and disappearance of these cysts and increased number of corpora lutea were seen suggesting ovulation. Follicles at different stages of maturation were observed.  
**Conclusion:** Fenugreek seed extract found to have a good potential as a curative therapy in the treatment of PCOS.

**Effect of Soya isoflavones on the Vagina of Senile Albino Rats: a histological study**  
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**Introduction:** The vagina is the copulatory organ in women. It’s a distensible fibromuscular tube that extends from the perineum through the pelvic floor and into the pelvic cavity. Atrophy of the vaginal mucosa at menopause is accompanied by reduced fluid secretion, reduced levels of lactobacilli, and increased vaginal pH, and that these epithelial changes are responsible for the vulvovaginal symptoms or the genitourinary syndrome and its symptoms. Soy is considered a category of botanical supplement. Due to the ability of its major isoflavones to bind estrogen receptors, it has often been considered a likely alternative to estrogen replacement therapy in postmenopausal women.  
**Objective:** The objective of this study was to detect effect of soya isoflavones on the structure of the vagina of senile rats using different histological techniques and to detect effect of isoflavones on thickness of the vaginal epithelium and the percent area of collagen in the lamina propria of the vagina using image analysis.  
**Methods:** An experimental study was conducted on 24 female albino rats, 16 of them were aged 24 months, while 8 of them were about 6 months rats were divided into 3 equal groups of 8 animals: group I (GI) received vehicle and represented adult control, group II (GII) represented senile group and received vehicle, group III (GIII) that received pilsacapne capsule (300 mg capsules) administered by gavage in a dose 100 mg/kg BW every day for 14 days. After that, the rats were killed under...