Effect of leflunomide on sciatic nerve of adult albino rats: a histological and immunohistochemical study

Amal A.A. Abd-El-Hafez

Introduction
Leflunomide is a commonly used disease-modifying antirheumatic drug. Potential clinical neurotoxic symptoms in patients treated with leflunomide in daily practice have been reported recently. It is unclear whether leflunomide is directly related to the occurrence of such nerve toxicity or whether other factors may be involved.

Aim of the study
This study was carried out to demonstrate the effect of leflunomide on sciatic nerve experimentally.

Materials and methods
For this purpose, 17 adult albino rats were used and were divided into three groups: a control group (five rats), the second group (seven rats), which received 2 mg/kg body weight of leflunomide orally once daily for 8 weeks, and the third group (five rats), which received 2 mg/kg body weight of leflunomide orally once daily for 8 weeks and left for 4 weeks withdrawal. Sciatic nerve specimens were processed for histological study by light microscopy, electron microscopy, and immunohistochemistry. The light microscopy data were morphometrically analyzed in the sciatic nerves of the groups.

Results
We observed splitting of myelin lamellae, presence of marked intramyelinic edematous clefts between the split myelin lamellae, infolded myelin loops, and myelin degeneration. Changes in the axons included formation of myelin rings and figures in some of the larger axons, degeneration, compression, irregularity, and shrinkage.

Conclusion
Therefore, it is recommended that patients under leflunomide treatment should be regularly examined for neurophysiological effects of leflunomide on peripheral nerves.
Can vitamin C affect the KBrO$_3$ induced oxidative stress on left ventricular myocardium of adult male albino rats? A histological and immunohistochemical study

Mohammad E.E. El-Deeb, Amal A.A. Abd-El-Hfez.

Potassium bromate (KBrO3) cardiotoxicity is not widely recognized, in spite of its well known oxidative cell and tissue damage. The wide exposure to KBrO3 in food and water necessitates finding of a simple and available antidote for its hazards like vitamin C. There are growing evidences that the regulation of redox reactions in cells is intimately tied to the levels of antioxidants. As the heart is highly vulnerable for oxidative damage, left ventricle muscle was the spotlight of our study. For this purpose 20 adult male albino rats were categorized into four groups (five rats each). Group 1 served as control; group 2 received 30 mg/kg/day vitamin C for 4 weeks. Group 3 was injected intraperitoneally with KBrO3 20 mg/kg/dose twice weekly for 4 weeks, and group 4 received both vitamin C and KBrO3 in the same scheme. Heart specimens were processed for various histological examinations. Sections from KBrO3 treated animals showed focal disruption of cardiac myocytes, deeply stained nuclei and dilated congested blood vessels. Ultrastructurally, irregular indented nuclei, focal lysis of the myofibrils and swelling of mitochondria were also observed. In contrast, minimal changes were observed in rats treated concomitantly with both vitamin C and KBrO3. Caspase 3 immunohistochemical reaction was nonsignificantly increased in group 3 cardiomyocytes. Semiquantitative morphological mitochondrial scoring and statistical analyses revealed significant changes between the studied groups. Finally, KBrO3 induced structural changes in rat cardiac muscle could be ameliorated by concomitant treatment with vitamin C.
Ultrastructural Study on the Changes in Neutrophils of Septic Patients in ICU

Ahmad Ali. Abd-El-Hfez (1) & Amal A. Ahmed (2)

**Background/Aim:** sepsis is the leading cause of death in hospital intensive care units (ICU), where the incidence is often 2-5 times higher than in other hospital departments. A number of laboratories have been interested in understanding how changes in immune cell apoptosis during sepsis appear to contribute to septic morbidity. Consistently, it has been found that immune cell apoptosis is altered in a variety of tissue sites and cell populations both in experimental animals and humans. Peripheral blood neutrophils react to an inflammatory stimulus with a delay in apoptosis, and not an increase as seen with lymphocytes. However, in this mechanism, a potentially harmful consequence appears to be buried. The aim of this work is to study the ultrastructural changes that occur in human neutrophil blood cells of patients with sepsis.

**Patients & Methods:** Blood samples were collected from 21 patients with sepsis in ICU and 11 healthy individuals as control, on sodium citrate for complete blood pictures and electron microscopic studies.

**Results:** The examined neutrophils of septic patients showed ultrastructural changes of priming and aging in the nuclei and different cytoplasmic organelles.

**Conclusion:** The morpho-functional modifications observed in electron microscopic studies of peripheral blood neutrophils of patients with sepsis indicated a primed activated state of these cells as well as delayed apoptosis.
Alpha-chlorohydrin effects on the epididymis of adult albino rat: A histological and immunohistochemical study

Gehan Soliman, Sadika M.T. Al Ebs, Amal A.A. Abd-El-Hafez

Chlorohydrin (ACH) is a well-known food contaminant, has shown anti-fertility activity in males. In this research we studied the histological and immunohistochemical changes in the epididymis of adult albino rat. Twenty adult male albino rats were divided into control (group 1) (10 rats) and experimental (groups 2 and 3) (10 rats). The experimental rats received chlorohydrin at a single oral dose of 100 mg/kg body weight. After 6 h (group 2) and 24 h (group 3) of ACH treatment, the specimens were submitted for the light, electron microscopic and tubulin immunohistochemical evaluations. Light microscopy after 6 h showed focal separation of lining epithelium, while EM examinations showed dilated rER, and Golgi complex. After 24 h LM demonstrated different stages of cell exfoliation; however, EM proved multilamellar bodies and dilated rER besides the granules. Immunohistochemi-cal examinations revealed decreased reactions in experimental groups. However, the mean total optical density of the tubulin immunostaining revealed statistical nonsignificant difference between the three groups. Thus ACH as an undesirable unavoidable food contaminant induced rapid histological alterations on caput epididymis with duration-dependent manner at the level of the cell and tissue that puts another obstacle on the road of fertility.
Ultrastructural characteristics of synovial fluid cells in rheumatoid arthritis and osteoarthritis

Amal A. Abd-El-Hafez, Ali El-Deeb, Mervat-Esmaiel, Rehab Al Sernagawy

Aim
The aim of the study was to evaluate the range of activation changes of polymorphonuclear leukocytes and the ratio of apoptosis and necrosis in synovial cells of patients with rheumatoid arthritis (RA) and osteoarthritis (OA), to study and compare the ultrastructural features of synovial fluid (SF) cells from RA and OA patients, to correlate it to activities of the diseases, and to produce microscopic translation to the events that occurred in the joint.

Patients and methods
Synovial effusions were aspirated from the knee joints of patients with RA (seven samples) and with primary OA (14 samples). Cytospin preparations were processed for transmission electron microscopy and assessed for the incidence of the neutrophil granulocytes, the dominating cell population in the arthritic SF, apoptosis, and cytophagocytic cells (CPCs) in the SF.

Results
In all samples under investigation, most of the synovial effusion cells had intact ultrastructure with a certain amount of apoptotic cells dominating over the cells with signs of necrosis and with few CPC. The highest rate of apoptosis was discovered in the synovial effusions of patients with RA and the lowest in those with OA; in addition, the incidence of CPC was lower in patients with OA. In RA, the current disease activity correlated with the incidence of the neutrophil granulocytes and of the apoptotic cells.

Conclusion
These data suggest that, in RA, despite exposure to the antiapoptotic signals, apoptosis of the synovial effusion polymorphonuclear leukocytes is maintained at a significantly higher level than in OA, providing elimination of the neutrophils accumulating in the joint cavity, and thus stimulating resolution of joint inflammation.
Effects of wasted anesthetic gases on human lymphocytes – A genetic study

Ezzat Abd-Elaziz Aldrieny a, Ahmad A.A. Abd-El-Hafezb, Amal A.A. Abd-El-Hafera, ∗

Information on potential genetic damage in humans after exposure to waste anaesthetic gases in Egyptian hospitals is scarce. To evaluate the possible genotoxic effects of waste anaesthetic gases, the chromosomal aberrations [CA] and the sister chromatid exchange[SCE] tests, were studied in peripheral blood lymphocytes in 26 operating room personnel(exposed group) currently employed at Tanta University hospitals, in comparison to a group of 13 non-exposed persons (control group), matched by age, sex and smoking habits. The results showed a statistically significant increase in chromosomal aberrations and sister chromatid exchange in the exposed persons in comparison to controls. Also it suggests that exposure to waste anaesthetic gases has the potential to cause changes in human genome.
Histological characteristics of Botulinum neurotoxin-A on rat skeletal muscles

Ali E. El Deeb(1) Reda El Bakary(2) Amal A.A.Abd-El-Hafez(2)

Introduction
Botulinum neurotoxins-A (BT-A) are bacterial enzymes that block neurotransmitter release. BT-A is widely used to treat spasticity and dystonias, and also in pharmacocosmetic and in the management of various types of pain.

Aim of the work
It is therefore important to clarify the histological characteristics involved in muscular tissue postinjection and to reconcile its injection for cosmoses under scope.

Materials and methods
Fifteen adult albino rats were used in this study and divided into three groups (five rats each). Group I served as negative control; groups II and III were injected into the right gastrocnemius muscle with BT-A in addition to saline into the left side to serve as positive control. Muscle harvest was examined by LM, EM, and morphometry at 28th day for group II with two rats of group I and at 56th day for group II with three rats of group I.

Results
Histological examination revealed neurogenic atrophy, target fiber change, hypertrophied fibers, and dilated aggregates of the sarcotubular system.

Conclusion
Neurogenic muscle atrophy following a single BT-A injection should be taken into consideration when repeated BT-A injections into the same muscle are needed.