



LIGHT AND TRANSMISSION ELECTRON MICROSCOPICAL OBSERVATIONS ON RAT SCIATIC NERVE INDUCED BY ELECTROCUTION

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Abstract:

Electrocution induces several alterations of the heart, skin, blood vessels, muscles, and nerves. The main objective of the present study was to investigate possible alterations of the sciatic nerve of rats exposed to 220 V for 5 seconds by light and transmission electron microscope (TEM). Electric current was applied on the thigh region near by the gastrocnemius muscles of rats. The Sciatic nerve and the muscles were taken immediately fixed in 10% Neutral buffered formalin and 4 % cold glutaraldehyde and processed for both light and TEM and stained by toulidine blue and lead acetate respectively and photographed by image soft ware. Light microscope showed irregularity of the shape with elongation of the sciatic nerve compared to the control. Moreover, annulations of the myelin sheath were detected. Mast cell infiltration were observed around the myelin sheath and suggested a response of the nerve tissue to injury may occurred. TEM showed the myelin sheath of non-exposed rats had no remarkable changes morphologically. The thickness of myelin sheath of non-exposed nerves was ranged from 1.41 ± 0.7 micron. While the exposed nerve had remarkable increase in the thickness and was 1.69 ± 0.8 micron. The exposed nerves had fragmentation either in localized area of the nerve and appeared bulby or onion-like or totally surround the whole nerve. No changes were observed in Schwann cells. Mast cells were detected around the affected nerves and had shown empty vesicles and suggested degranulation occurred. These results can be a helpful tool in forensic toxicology