

Ultrastructural changes induced by Cadmium in mice cerebellum.

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Cadmium is an inorganic pollutants present in the ecosystems, it presents particular characteristics: a high toxicity to low dose, a long period of half life and low excretion frequency originated by organisms; for this reason it is considered like one of the most dangerous from the point of view the environmental contamination (1). This work makes an analysis of cerebellum ultrastructure in acute intoxicated mice with Cadmium. Male mice (*Mus musculus*), weighting between 22 and 24 gr., were divided in 3 groups of 20 mice each one: Group I (control) with ingest administration of water during 100 days. Group II and III, with ingest administration of CdCl₂ 100 ppm and 150 ppm respectively during 100 days. The animals were sacrificed after experimental procedures and samples of cerebellum of each animal were fixed and processed by standard methods to perform transmission electron microscopy studies and embedded in Epon 812. Fine cuts of 60 nm thickness were carried out, contrasted with uranyl acetate and lead citrate and observed in a Hitachi H-7000 electron microscope. The analyses for electronic microscopy showed alterations in the cells treated with cadmium that vary according to the concentration; the Fig.1 (cadmium 100 ppm), showed dens neuron with hiperchromatic nucleus, prominent nucleoli and accentuate dilatation of organelles. Also, axons with abnormal myelin adjacent to neuron were observed. Fig 2 illustrates a great number of axons with myelination pattern affected by separation of myelin lamellae from the axonal surface. When the cells undergo larger concentration of Cd⁺² (150 ppm), similar changes were observed, Fig.3 shows treated cells, some neurons and neuroglials cells were observed; also neuropil elements and axons with affected myelination pattern were presents. Fig 4.-Showing a granulose neuron (150 ppm of Cd⁺²), with accentuate dilatation of vesiculovacuolars elements and discreet dilatation of RER and Golgy. The obtained results allow us to suggest that cadmium induced a citotoxic effects in the studied tissue similar to the reported by other authors. (2,3,4).

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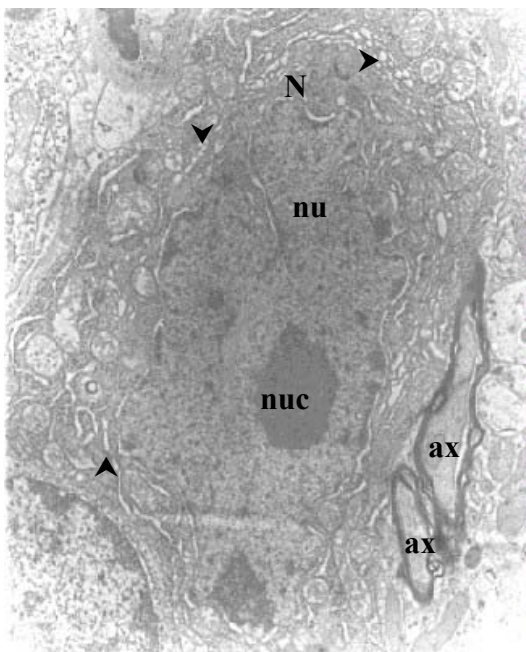


Fig.1.- Cells treated with cadmium 100 ppm, show dense neuron (N) with hyperchromatic nucleus (nu), prominent nucleoli (nuc), and accentuate dilatation of organelles (▼), also axons with abnormal myelin adjacent to neuron were observed (ax). 8.800 X

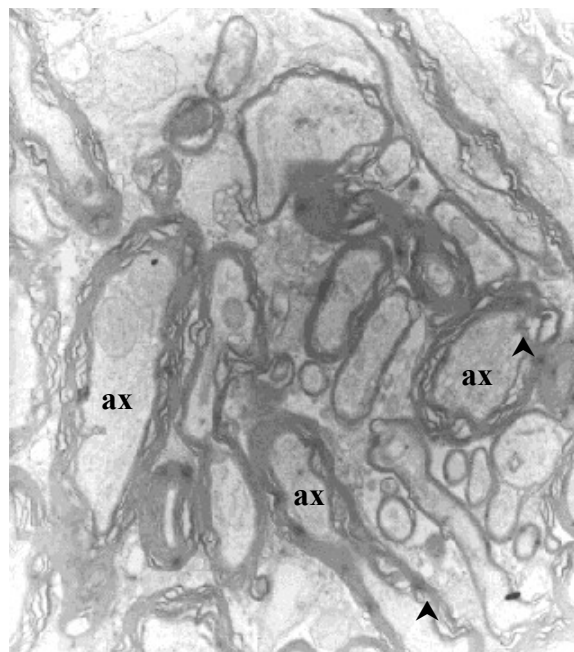


Fig 2.- Cells treated with cadmium 100 ppm illustrate a great number of axons with myelination pattern affected by separation of myelin lamellae from the axonal surface. 8.800 X.

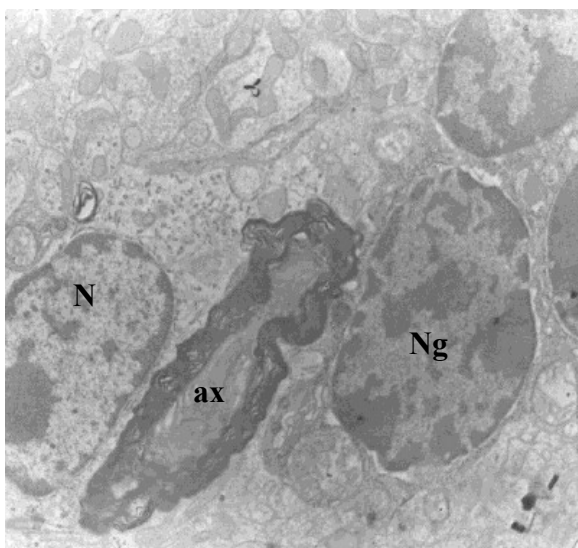


Fig 3.- Shows treated cells with cadmium 150 ppm, it observed some neurons (N) and neuroglial cells (Ng), also neuropil elements (np) and axons (ax), with normal pattern of myelination affected was present. 8.800 X.

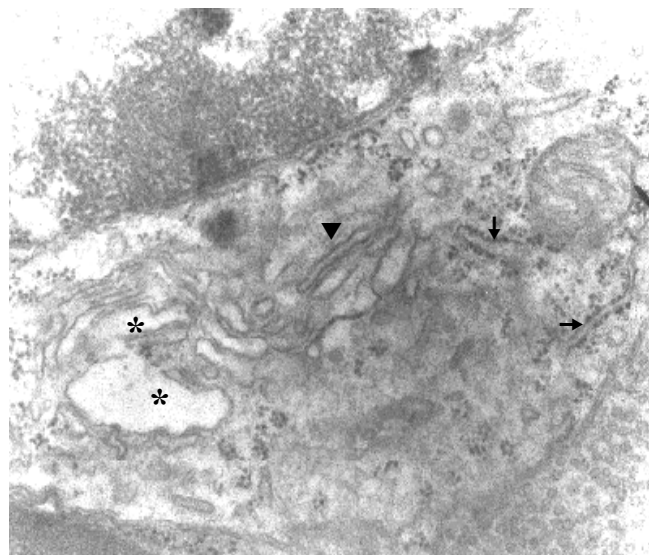


Fig 4.- Showing a granule neuron (150 ppm of Cd²⁺) with accentuate dilatation of vesiculovacuolar elements (*) and discrete dilatation of RER (↓) and Golgi. (▼) 33.000 X