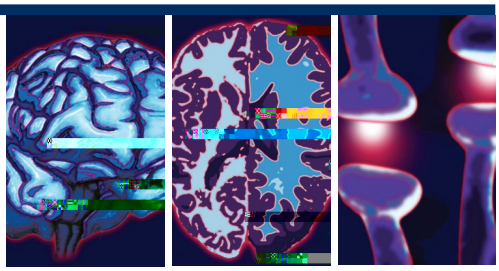
Case Report



Ultra-Structural Observation of the Focal Brain in a Patient with Motor Neuron Disease

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ABSTRACT

Objectives: To observe the ultra-structural changes of the brain tissue in a patient with motor neuron disease.

Methods: A stereotactic brain biopsy of the local lesions was performed based on the abnormal signals on magnetic resonance images**,** and the brain tissues were underwent light and electronic microscopic examination.

Results: Extensive extra-cellular edema and neuron necrosis were found in the internal capsule and thalamus. Metachromatic substances were found in the cytoplasma and were characterized by electronic dense granules, arranged in at plate layers or in at lines. Disorganized and degenerating mitochondria were observed in astrocytes and neurons.

Conclusions: Ultra-structural observation of the brain tissues might be helpful in understanding the central neuropathological changes in a patient with MND. Characteristic metachromatic substances might be found in the cytoplasma. Neurons in the brain of a patient with MND might undergo a process of degeneration.

Keywords

Ultra-structural observation, Stereotactic brain biopsy, Motor neuron disease, Di usion tensor imaging, Metachromatic substances

Introduction

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(Figure 1-B).

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(Figure 1A B).

(Figure 2C D).

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Pathological Findings

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Discussion

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Figure 2: Light microscope examination of the internal capsule and the thalamus.

Extensive extra-cellular edema was observed in the internal capsule and the thalamus (A and C). Neuron necrosis and degenerations were also observed in the brain. The neurons were deformed and the Niss body disappeared. The nuclear structures of the neurons were ambiguous. Vacuoles as well as infiltrated neurogliocytes were observed in the cytoplasma (B and D).

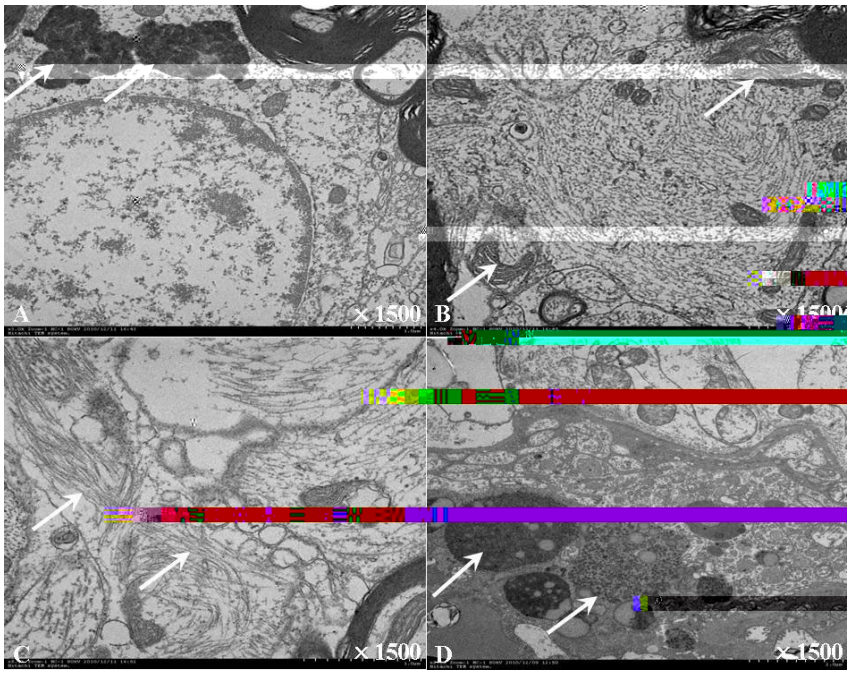
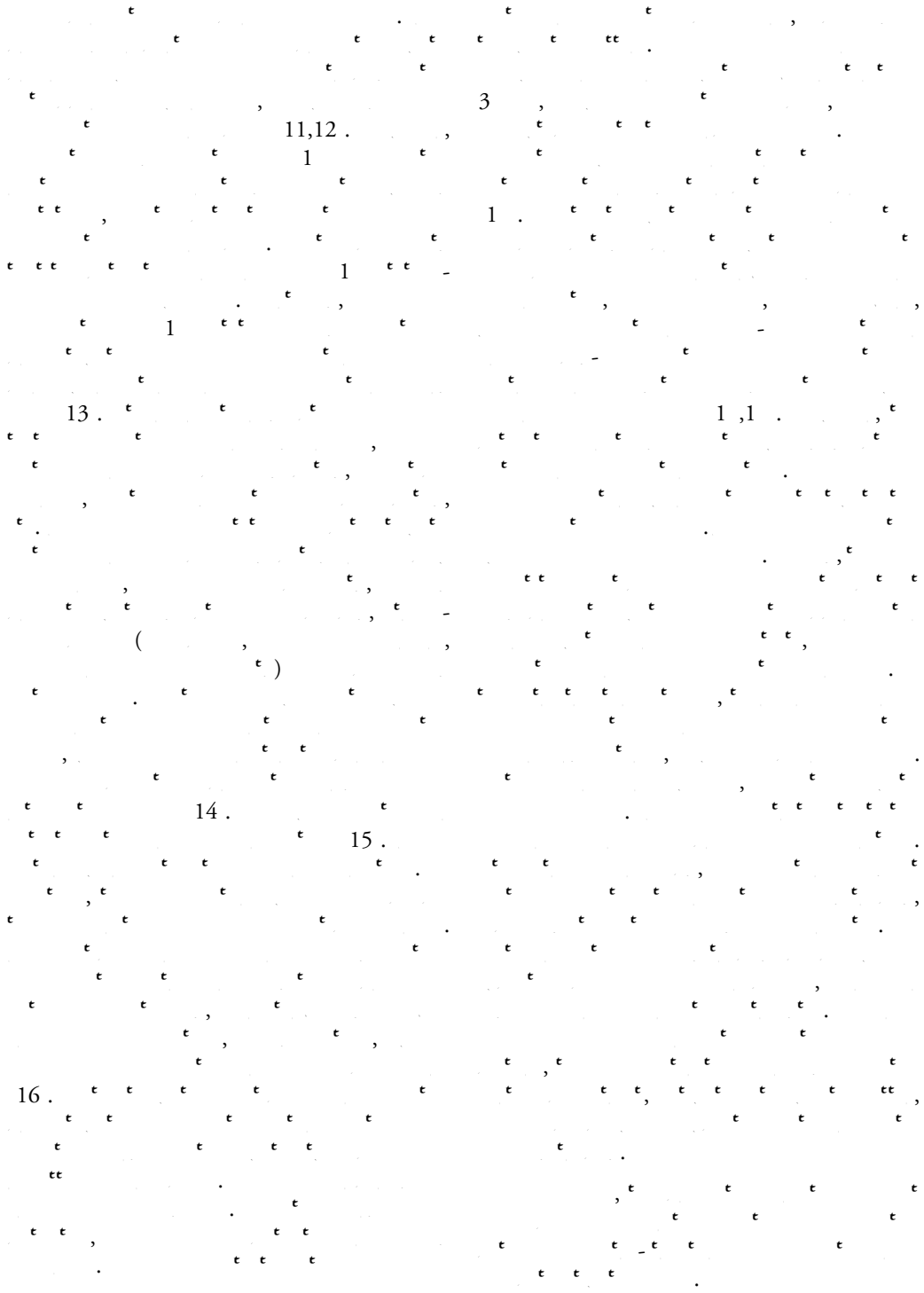


Figure 3: Electronic microscope examination of the internal capsule and the thalamus.

The electronic microscope demonstrated that the metachromatic substances deposited in the cytoplasma were characterized by electronic dense granules (A and D), arranged in flat plate layers (B) and in flat lines(C). Disorganized and degenerating mitochondria were observed in astrocytes and neurons.



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