

Symmetrical Pyramidal Tract Lesions on MRI Images of Amyotrophic Lateral Sclerosis

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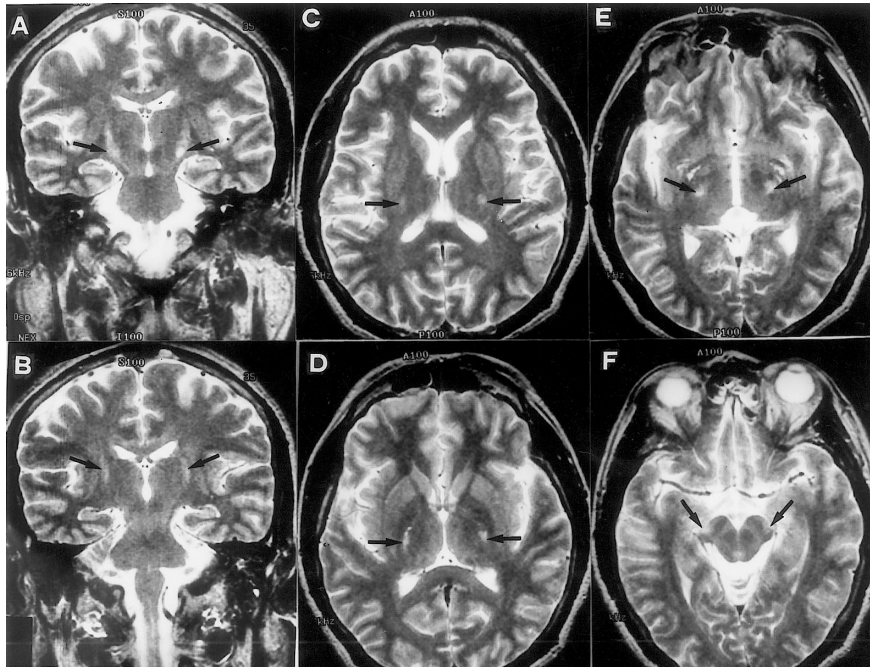


Figure. Serial T2 weighted MRI images showing symmetrical lesions (arrows) in the pyramidal tracts at the coronal and transverse sections of internal capsule (A-E) and cerebral peduncle (F).

The 35-year-old man had been relatively healthy in the past until 10 months ago when he gradually developed weakness in the left limbs followed by the right limbs 4 months later. He also noticed muscle atrophy in both hands and mild tremor in both legs. Dysarthria and dysphagia became troublesome 2 months before. Mild loss of body weight was also noted.

On examination, he was alert and cooperative. His speech was mildly slurred. Muscle power decreased in the extremities. Obvious atrophy of small hand muscles

was associated with fasciculations. Generally increased deep tendon reflexes were elicited with the bilateral presence of Hoffmann's and Babinski's signs. The sensory function was intact. EMG showed fibrillations, positive waves, fasciculations and/or polyphasic waves in the selected muscles from the face, trunk and limbs, most prominently in the left hand. Motor nerve conduction velocity showed mildly prolonged distal latencies and/or mildly decreased action potentials and motor conduction velocities. Motor evoked potentials revealed

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mild prolong in the central motor conduction. Sensory evoked potentials as well as sensory conduction velocities were normal. T2-weighted magnetic resonance imaging showed symmetrical hyperintensity lesions in the bilateral pyramidal tracts at the levels of posterior limbs of internal capsules (Figs. A-E) and cerebral peduncles (Fig. F). The investigations of serum biochemistries and cerebral spinal fluid were normal. From the clinical and MRI findings, the diagnosis of amyotrophic lateral sclerosis (ALS) was made.

ALS is a degenerative disorder, which may primarily invade pyramidal tracts and motor neurons. The MRI lesions of bilateral pyramidal tracts in our patient were compatible with those in previous reports⁽¹⁻⁵⁾. These lesions confined to pyramidal tracts could possibly be found in lacunar infarctions, multiple sclerosis and other demyelinating disease, vasculitis, hemorrhage, neoplasm, Leigh's disease, Wilson's disease, neurofibromatosis, post-traumatic, neuroepithelial cyst, idiopathic leukoencephalopathy. But those have rarely been reported to involve both cerebral peduncles and internal capsules symmetrically. Interestingly, normal individual may show slightly high signals on T2-weighted MRI in part of the posterior limb of internal capsule⁽⁶⁾. The possible pathogenesis on this central white matter is the wallerian degeneration extending from the cortex to the cerebral peduncles⁽⁷⁾, which might be responsible for the prolongation in the T2 relaxation time.

We conclude that these symmetrical MRI lesions of

the brain primarily involving bilateral pyramidal tracts are provide additional evidence for the diagnosis of ALS, and it is worth to be looked at carefully for any ALS patient in suspect.

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