Brief Communication

An unusual presentation of late onset multiple sclerosis with amyotrophic lateral sclerosis

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Multiple sclerosis (MS) is a demyelinating disease that begins mostly in young adulthood with a tendency of chronicity. It is characterized by inflammation, demyelination, and glial sclerosis in the white matter of the central nervous system. The disease begins at ages between 20 and 40 and it is rarely diagnosed after age 50. Such cases are defined as late onset MS cases and the diagnosis is difficult because of the age of onset, and the chronic progressive nature of the disease.[1] Peripheral nerve involvement may be seen in MS and there are cases where electrophysiological abnormalities are documented.[2] Here, we describe a MS case with subacute onset and a progressive course in whom overlapping motor neuron disease is also diagnosed clinically and electrophysiologically. The medical literature confirms this rare combination of both diseases. While reporting this case, we aimed to point out that MS and ALS may show comorbidity in old age and that the proper diagnostic and therapeutic approach is important in the outcome.

A 53-year-old, right handed man presented with complaints of pain in the left leg and a postural tremor of both hands. He also reported difficulty in swallowing, articulation of speech and losing his balance while walking. He realized that he had lost several pounds in 3 years and had a history of a fracture in his right elbow 25 years ago after a fall. There was no specific history of a systemic or an inherited disease. His vital functions were normal, and his neurological examination indicated a mild dysarthria, generalized fasciculations together with tongue fasciculations, atrophy of hands, brisk tendon reflexes, bilateral Achilles clonus, a traumatic sequel of flexion contracture in the right elbow, moderate weakness of fingers of both hands, and a mild weakness of bilateral dorsiflexion and bilateral hip flexion. The mini mental score was 20 out of 30 and neuropsychological tests revealed that his frontal executive functions were deteriorated. Routine complete blood count and biochemical tests were normal. The CSF IgG index was 1.36 and oligoclonal band was positive. The cytological examination of CSF and pathological examination of sural nerve yielded normal results. On cranial MRI, there were lesions in the periventricular white matter, corpus callosum, and mesencephalon. The lesions were ovoid shaped and hyperintense on T2W (T2 weighted) and flair sequences, they were hypointense on T1W (T1 weighted) sequences. There were no contrast-enhanced lesions or diffusion changes on conventional and diffusion weighted MRI indicating that there were no active lesions. On cervical spinal MRI, there were 2 hyperintense lesions at the C2-C3 level in T2W sequences that were thought to be compatible with demyelination. There was no sign of vasculitis either in physical examination or in laboratory studies. Visual evoked potentials (VEP) and brainstem auditory evoked potentials (BAEP) tests showed pathological results bilaterally with prolonged P100 latencies and interpeak latencies of III-V. His EEG was normal. Although results of nerve conduction studies (NCS) were unremarkable, needle electromyography (EMG), yielded generalized chronic denervation in the muscles of 4 extremities. Acute denervation was found in the same muscle groups. There were motor unit action potentials (MUAPs) showing acute and chronic denervation in cranial (sternocleidomastoid and genioglossus muscles) and thoracic paraspinal muscles (on T6 level). The MUAPs characteristic of active regeneration were also seen. With all the diagnostic clues, the patient was diagnosed as a primary progressive MS case, overlapping a clinically probable and EMG (+) ALS. Immunosuppressants are used for the therapy of primary progressive MS, and an IV therapy of one g/day methyl prednisolone was initiated and continued for 7 days. The expanded disability status scale score was 4.5 and regressed to 3.5 after the steroid therapy. After IV steroid, 7.5 mg oral methotrexate was given daily once a week per month and the patient also took a physical rehabilitation program. No clinical progression was seen in a follow up of 3 years with the same maintenance therapy. Electrophysiological studies did not yield any different results other than the results of the former tests including VEP and BAEP studies. The EMG follow-ups were performed every 6 months and they did not indicate any further axon loss in the peripheral nerves.

Amyotrophic lateral sclerosis concurrent with MS has been reported rarely in the medical literature. Our case had a progressive clinic status with bulbar symptoms with first and second order neuron involvement signs. These were thought to be significant of a clinical diagnosis of motor neuron disease at first sight, but there were lesions on cranial MRI consistent with MS. There were also the positive CSF signs together with the pathology of evoked potentials suggesting a diagnosis of MS, and we decided that the patient could be classified as a primary progressive MS case, as per McDonald's criteria.[3] It was also evident that the MS diagnosis was overlapping a diagnosis of a clinically probable ALS according to El Escorial Criteria. According to the criteria that outline the electrophysiological diagnosis of ALS, electrophysiological evidence consistent with ALS is defined as active denervation and reinnervation in 3 or 4 body segments (bulbar, cervical, thoracic,

and lumbosacral) that cannot be explained by multiple individual mononeuropathies or radiculopathies.[4] Our electrophysiological study fulfilled these criteria. Pathological needle EMG findings are not reported frequently in MS. In one of the case reports, needle EMG abnormalities were attributed to demyelinating plaques in the ventral nerve root exit zone.[5] Our patient's needle EMG findings could point to a similar pathology, although EMG findings as extensive as our patient's are not likely in MS. Peripheral nerve pathologies and electrophysiological abnormalities may be encountered in approximately 16% of MS patients.[4] The most common ones are amplitude loss in ulnar and sural nerves and slow nerve conduction velocities of tibial and sural nerves.[4] Deterioration of cognition due to demyelination of the periventricular white matter causes memory deficit, verbal function disorder, inappropriate laughing and crying and emotional outbursts in MS patients.[1] Cognitive decline is more significant in primary progressive MS and it can also be seen in ALS. Aphasia, extrapyramidal signs, hemianopsia and second order motor neuron signs are usually rare in MS. Onset of MS with second order motor neuron signs is even rarer.[5]

This case and a few similar cases in the literature may raise the suspicion of common etiologies of ALS and MS, while this case represents a complex controversial situation where it is hard to decide whether there is mimickery or accompaniment. Multiple sclerosis with an onset of second order motor neuron signs in elderly patients is an unusual condition and may mimic ALS both clinically and electrophysiologically. Detailed electrophysiological and clinical follow-ups may help in establishing a better approach to such patients.

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