Case Report

Co-occurrence of multiple sclerosis and Parkinson disease

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Abstract

Parkinson disease (PD) is a neurodegenerative disease of the central nervous system (CNS) with the highest prevalence in adults over 60 years of age On the other hand multiple sclerosis (MS), which mostly affects individuals between 20 and 40 years of age, is another neurodegenerative and autoimmune disease of the CNS, however, less common than PD. Here we aim to report the case of a 39-year-old woman, who developed PD 18 years after diagnosis of MS.

Key Words: Multiple sclerosis, neurodegenerative disease, Parkinson disease

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INTRODUCTION

Parkinson disease (PD) is a neurodegenerative disease of the central nervous system (CNS), with the highest prevalence in adults over 60 years of age.[1] On the other hand multiple sclerosis (MS), which mostly affects individuals between 20 and 40 years of age, is another neurodegenerative and autoimmune disease of the CNS, however, less common than PD.[2]

Destruction of the dopaminergic pathway in the basal ganglia, especially the substantia nigra, is the hallmark of PD, and demyelinating plaques, with a preference for the subcortical white matter and periventricular area, are seen in MS patients.[3,4]

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A number of case reports has suggested a co-occurrence of MS and PD.[4-12] Two hypotheses have explained the link between these two diseases, one is the coincidental co-occurrence and the other is a casual relation, wherein. PD can develop because of the demyelinating plaque in the basal ganglia of MS patients.

Here we aim to report the case of a 39-year-old woman, who developed PD 18 years after diagnosis of MS.

CASE REPORT

A 39-year-old woman, with a negative family history, complained of an insidious onset of paresthesia in the left leg and arm, which became apparent at the age of 21 years. After excluding other possible diagnosis at that time, the clinical examination and MRI findings confirmed the diagnosis of MS, according to McDonald's criteria. Treatment for MS with beta-interferon 1a was begun.

During these 18 years, the patient experienced two more relapses: The first time was with paresthesia in the left leg and arm that she fully recovered from with intravenous methylprednisolone treatment. The second time was eight years ago, when she experienced

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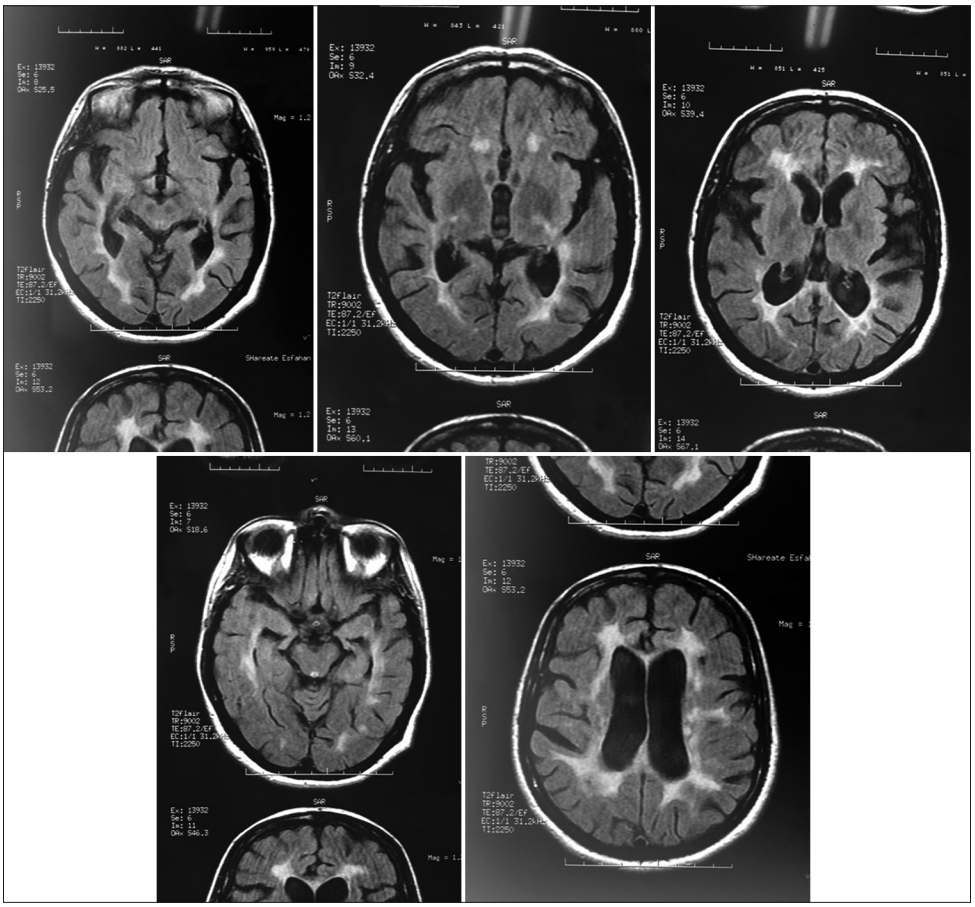

Figure 1: The axial flair MRI of the brain of the patient with periventricular confluent hyper signal plaques

frequent imbalance and recurrent falls, however, this time after pulse therapy she did not fully recover.

From two to three months ago, she has developed spasms in both legs and since one month she has complained of tremor and rigidity in her hands. Physical examination revealed 2+ reflexes in her hands and 3+ reflexes in her legs; cogwheel rigidity in her arms and spasticity in her legs also existed. Her gait is spastic and tandem gait is damaged, her arm swing during walking is lost, and the Glabellar reflex is positive. In a reposed position, she has rest tremor in her hands.

The finger-to-nose test, which is an indicator of coordination, is also damaged. Other neurological examinations are within normal limits.

The repeated brain magnetic resonance imaging (MRI) showed a gadolinium enhancing plaque in c6–c7, with no signal change in the basal ganglia [Figure 1]. Therapy with anticholinergic trihexyphenidyl (6 mg/day) and levodopa (300 mg/day) was begun and her response to these drugs was excellent.

DISCUSSION

Co-occurrence of PD and MS is rare. A number of case reports have been described, in which the relationship between these two diseases was either coincidental or casual.[4-12]

Coincidental reports were described in patients with an insidious onset of PD, with a good response to dopaminergic therapy or persistence of the symptoms despite corticosteroid therapy;[11,13,14] however, a casual relationship is proposed to exist in patients with a rapid onset, strategically located demyelinating plaque, and excellent response to corticosteroid therapy for extrapyramidal signs. A casual relationship was reported in six case reports, wherein, demyelinating plaque was located in the vicinity of the thalamus, globus pallidus, and substantia nigra, and also the lateral substantia nigra and nucleus rubber.[5,15-17]

Here, in our patient, there was no signal change in the MRI of the basal ganglia, and also a good response of the patient to dopaminergic therapy may be the clue,

which points to the coincidental relationship of MS and PD in this patient.

An increased relative risk of PD in MS patients was reported in a Swedish cohort study,[18] however, in contrast to these findings, a case–control study on the Danish population, showed no link between PD and autoimmune disease; however, in that study, the number of MS patients in the control group was higher than in the case population.[19]

As the life expectancy of MS patients over time has improved, the chance of developing PD in MS patients has become more apparent, so that should be considered in older MS patients, who are commonly subjected to underdiagnosis of other comorbidities such as PD.

CONCLUSION

Co-occurrence of MS and PD is rare. Here we have reported a case of development of PD, 18 years after diagnosis of MS.

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