ΔΥΣΤΟΝΙΑ ΟΦΕΙΛΟΜΕΝΗ ΣΕ ΕΝΔΟΜΥΕΛΙΚΗ ΑΛΛΟΙΩΣΗ ΤΗΣ ΑΜΣΣ ΩΣ ΠΡΩΤΗ ΕΚΔΗΛΩΣΗ ΠΟΛΛΑΠΛΗΣ ΣΚΛΗΡΥΝΣΗΣ – ΑΝΑΦΟΡΑ ΔΥΟ ΠΕΡΙΣΤΑΤΙΚΩΝ ΚΑΙ ΑΝΑΣΚΟΠΗΣΗ ΤΗΣ ΒΙΒΛΙΟΓΡΑΦΙΑΣ

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Περίληψη

Η δυστονία συνήθως σχετίζεται με αλλοιώσεις στα βασικά γάγγλια, το θάλαμο, τα παρεγκεφαλιδικά σκέλη ή την έσω κάψα. Στο άρθρο αυτό αναφέρουμε δύο περιπτώσεις ασθενών με πρώτη εκδήλωση δυστονίας που τελικά διαγνώστηκαν με πολλαπλή σκλήρυνση. Η μαγνητική τομογραφία εγκεφάλου και στους δυο ασθενείς ανέδειξε απομυελινωτικές εστίες στην περικοιλιακή και υποφλοιώδη μοίρα της λευκής ουσίας, το μεσολόβιο ή και τα παρεγκεφαλιδικά ημισφαίρια χωρίς ωστόσο προσβολή των περιοχών που συνήθως ευθύνονται για την πρόκληση δυστονίας όπως περιγράφηκε πιο πάνω. Ακολούθησε μαγνητική τομογραφία της ΑΜΣΣ που και στους δυο ασθενείς αποκάλυψε περισσότερες από μία ενδομυελικές αλλοιώσεις με εντόπιση κυρίως στον ανώτερο αυχενικό μυελό. Η δυστονία υποχώρησε σημαντικά μετά την χορήγηση αγωγής με μεθυλπρεδνιζολόνη και στους δυο ασθενείς. Θεωρούμε ότι η δυστονία μπορεί να αποτελεί την πρώτη εκδήλωση πολλαπλής σκλήρυνσης και να οφείλεται σε αλλοίωση του αυχενικού μυελού.

Λέξεις ευρετηρίου: Δυστονία, πρώτη εκδήλωση, πολλαπλή σκλύρηνση, αυχενικός μυελός, μεθυλπρεδνιζολόνη

DYSTONIA DUE TO CERVICAL MYELITIS AS PRESENTING SYMPTOM OF MULTIPLE SCLEROSIS – REPORT OF TWO CASES AND REVIEW OF LITERATURE

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Abstract

Dystonia is usually associated with lesions in the basal ganglia, thalamus, cerebral peduncle or internal capsule. We report two patients who presented with dystonia as first symptom and were diagnosed with MS afterwards. Brain MRI showed demyelinating lesions in the periventricular or subcortical white matter, the corpus callosum and the cerebellum without any involvement of the usual sites responsible for dystonia mentioned above. MRI of the cervical spine showed in both patients more than one lesions mostly at the upper level of the cervical spinal cord. Dystonia improved after administration of methylprednisolone in both patients. We consider that dystonia may be the presenting symptom of multiple sclerosis caused by cervical spinal cord lesions.

Key words: Dystonia, first symptom, multiple sclerosis, cervical spinal cord, methylprednisolone

Introduction

Multiple sclerosis (MS) is an autoimmune inflammatory demyelinating disease of the central nervous system characterized by dissemination of the lesions in time and space. While tremor is frequently seen in patients with multiple sclerosis, other movement disorders such as dystonia or paroxysmal dystonia are less frequently reported [1]. Dystonia is a neurological syndrome characterized by involuntary, sustained, patterned and often repetitive contractions of opposing muscles, causing twisting movements or abnormal postures [2]. (MS)-related dystonia can appear during the course of the disease or even as the presenting symptom and is usually related to lesions of the basal ganglia, thalamus, cerebral peduncle or internal capsule [3-7]. We report two patients who were diagnosed with MS after presenting with dystonia as first symptom, that might be correlated to the demyelinating lesions in the cervical spinal cord.

Case 1 presentation

The first patient is a 60-year-old woman who exhibited episodes of painful left hemidystonia lasting each one about 30 seconds, which started two weeks before admission to hospital (see Video, Supplemental Digital Content 1, which demonstrates an episode of hemidystonia). The episodes were always triggered by cervical movement and accompanied by a preceding electrical sensation running down the spine (Lhermitte's sign). During each episode consciousness was preserved.

Her medical history was negative for cerebrovascular disease, seizures, head trauma, hypertension, diabetes or any other neurological disorder. She denied any alcohol or drug use. From her family history she had one stepbrother diagnosed with MS.

The neurological examination showed right abducent nerve palsy, no limb weakness and increased right-limb reflexes. Plantar response was extensor on the right and the heel to shin test revealed dysmetria on both lower limbs. No decrease in light touch or pin prick senses was found. Patient's gait was wide based.

Magnetic resonance imaging (MRI) of the brain showed several demyelinating lesions in the periventricular and subcortical white matter. Smaller demyelinating lesions were also present at the corpus callosum and the cerebellum. There were no lesions in the basal ganglia or thalami. A subsequent MRI of the cervical spine revealed several intramedullary lesions from which the largest one at C3 enhanced after i.v. administration of gadolinium [Figure 1].

Laboratory studies including routine chemistries, a complete blood count, sedimentation rate, thyroid function tests and protein electrophoresis were all normal. Anti-nuclear antibodies, anti-dsDNA, antiphospholipid and anti-AQP4 antibodies were negative. Electrocardiogram and EEG were also normal. CSF analysis showed normal protein levels but IgG index was elevated and oligoclonal bands were present (type 3). The patient was diagnosed with MS and symptoms improved significantly after administration of intravenous methylprednisolone. Later on immunomodulary treatment with glatiramer acetate was started and the patient remains since then (two months) asymptomatic.

Case 2 presentation

The second patient is a 44-year-old woman who was admitted to our clinic complaining for numbness of her left limbs since two weeks followed by dystonic posture and movements of her left hand since 1 week. Her medical history was negative for any neurological or other disease except for heterozygous beta thalassemia.

The neurological examination showed involuntary, sustained flexed posture of the left hand together with minor choreiform movements of the fingers (see Video, Supplemental Digital Content 2, which demonstrates the focal dystonia and the choreiform movements). There was slight weakness of the left upper limb. No cranial nerve palsy was observed. The sensory system examination was normal. Plantar reflexes were flexor bilaterally. Cerebellar tests were normal.

MRI of the brain showed few in number demyelinating lesions in periventricular, subcortical white matter and corpus callosum. There were no lesions in the basal ganglia, thalami or the cerebellum. MRI of cervical spine revealed three intramedullary lesions at C2, C4 and C7 level [Figure 1]. None of the lesions were enhancing after intravenous administration of gadolinium.

CSF analysis showed a slight increase in protein levels, IgG index was also elevated and oligoclonal bands were present (type 2). The rest laboratory tests including routine chemistries, a complete blood count, sedimentation rate, thyroid function tests and protein electrophoresis were all normal. Anti-nuclear antibodies, anti-dsDNA, antiphospholipid and anti-AQP4 antibodies were negative. The patient was diagnosed with MS and showed improvement of symptoms after receiving a 5-day treatment course with methylprednisolone. Afterwards the patient was started on natalizumab.

Discussion

Both patients reported, had a movement disorder as presenting symptom of MS. The first one had kinesigenic paroxysmal dystonia (PKD) and the second one sustained focal hand dystonia which are both rare clinical presentations of MS. We believe that

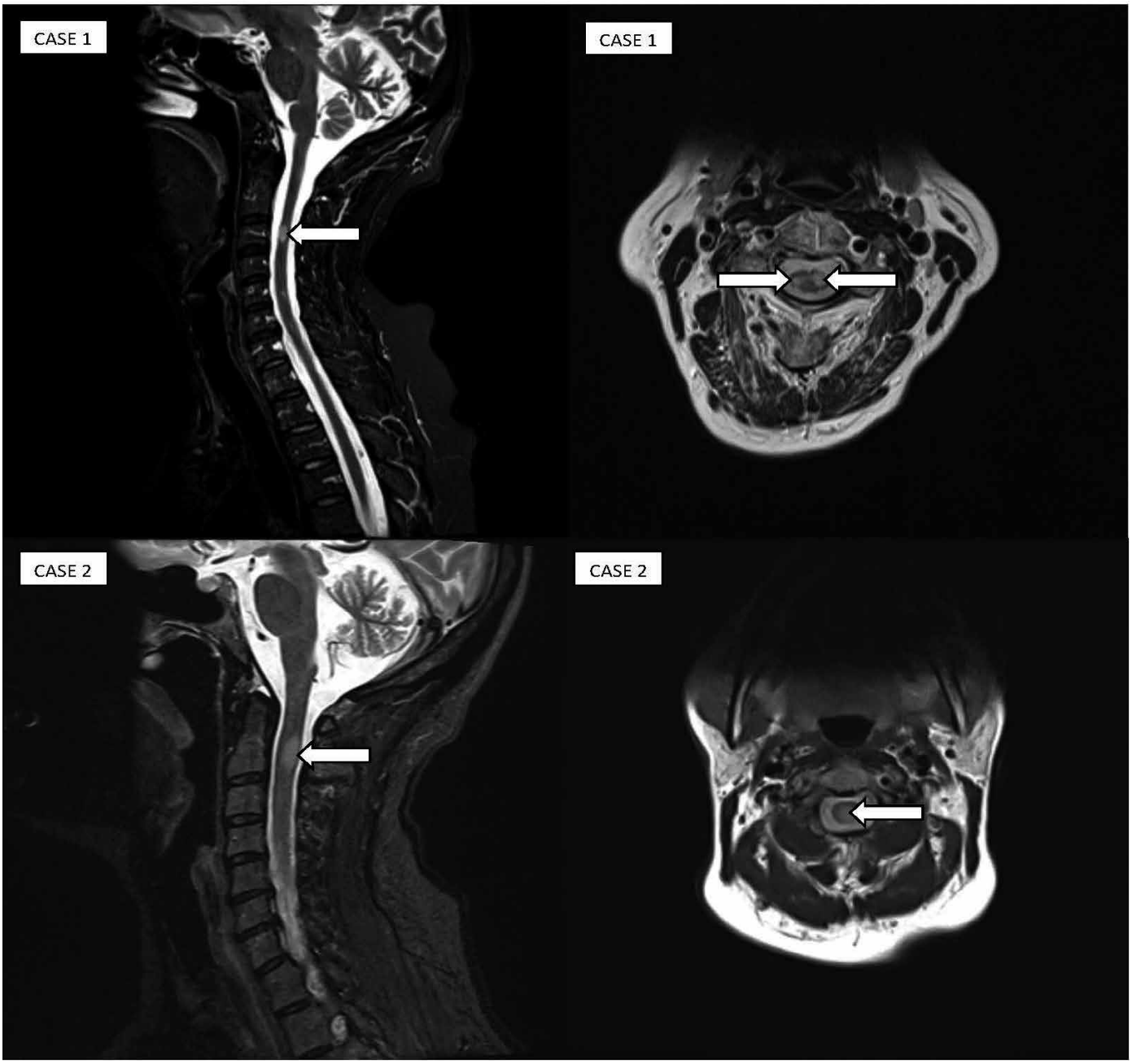

Figure 1. MRI images of the patients reported. Arrows show demyelinating plaques in cervical spinal cord

there is a correlation between cervical myelitis and dystonia because of the following indicating obervations: 1)The MRI of the brain in both cases did not show any lesion in basal ganglia, thalamus, cerebral peduncle or internal capsule which are the usual sites responsible for movement disorders such as dystonia. 2) On the other hand both patients had intramedullary lesions (the first one contrast-enhancing) of the upper cervical spinal cord. 3) Moreover the episodes of hemidystonia were triggered only after cervical movement and accompanied with Lhermitte's sign. 4) The clinical syndrome in both cases was resolved after treatment with steroids.

PKD and other forms of dystonia associated with cervical lesions have rarely been described in MS especially as presenting symptom. In 1992 Previdi and Buzzi reported a case of paroxysmal dystonia with a single MRI lesion of unknown etiology in the cervical region [8]. In 1994 Uncini et al reported two patients with hand dystonia associated with cervical demyelinating lesions in the absence of basal ganglia or thalami lesions [9]. After two years Cosentino et al reported another case of paroxysmal kinesigenic dystonia as the first presentation of MS in a patient who had only a cervical spinal cord lesion [10]. In 2000 Yücesan et al described an MS patient with

cervical C2-3 and C4 demyelinating lesions who presented left hemidystonia without any basal ganglia lesions [7]. Two years later Schmidt et al also reported kinesigenic dystonia in 4 patients with neuromyelitis optica and cervical or cervicodorsal myelitis [11]. In 2014 Öcek et al reported three cases of paroxysmal focal hand dystonia in MS patients who had contrast enhancing demyelinating lesions at the level C2-3 without any basal ganglia involvement [12].

In all cases reported the lesion to which dystonia is ascribed is located at the upper cervical spinal cord. Beside our patient with PKD, we found only two more cases in literature in which dystonia is precipitated by stimulus like Lhermitte's sign [10, 13]. In most of the cases including ours dystonia was improved after administration of steroids although in some of the them other drugs like carbamazepine or acetazolamide were added for better results. The pathogenesis of dystonia associated with cervical demyelinating lesion remains yet unclear. The most widely accepted theory, proposed by Osterman and Westerberg in 1975, is that ephaptic transmission between demyelinated axons might be responsible [14].

Conclusion

Dystonia due to cervical myelitis is a rare initial presentation of multiple sclerosis. However during diagnostic work up of a patient presenting with dystonia, when typical findings in brain MRI are absent, MRI of cervical spine should be considered as this may be a presenting symptom of an MS related syndrome.

Patients

Both patients gave informed consent for recording them and using their medical data.

List of Supplemental Digital Content

Supplemental Digital Content 1.wmv
Supplemental Digital Content 2.wmv

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