CASE REPORT

Focal Dystonia of Right Hand with Mirror Movements Upon Use of Left Arm
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ABSTRACT
Dystonia is a movement disorder characterized by sustained muscle contractions, causing twisting and repetitive movements or abnormal postures of affected body parts. Here, we present a novel case of focal dystonia of a 51 years old right-handed woman who had developed difficulty in writing and performing fine motor tasks. Due to a discomfort in her right hand at use, she started using her left hand instead and noticed inconsistent mirror movements in her right hand upon use of left hand. She was treated with trihexyphenidyl which allowed her right hand to function better, though writing still remained a problem.

Key words: Dystonia. Focal. Movement disorder. Mirror movements. Trihexyphenidyl.

INTRODUCTION
Dystonia is a syndrome characterized by sustained muscle contractions, frequently causing twisting and repetitive movements or abnormal sustained postures of affected body parts. Dystonia is classified according to the underlying cause, the age at onset, and most importantly the parts of the body affected.1

The underlying causes can be broadly grouped into primary (idiopathic) and secondary (symptomatic) dystonia. Primary dystonia is caused by a pathological malfunction in areas of the nervous system associated with motor function, such as the basal ganglia. Secondary dystonia refers to dystonia caused by other environmental factors, such as brain damage.1 Defining the age at onset is an important factor related to prognosis because the younger the age, the more likely is that the dystonia will become generalized throughout the body.1

Dystonia is defined as focal when it involves an isolated body region. Most focal dystonias such as musician’s dystonia and writer’s dystonia are considered basal ganglia disorders and are idiopathic in nature. Only a few cases of mirror dystonia, with dystonic posturing observed upon the movement of opposite hand, have been reported so far.2

Herein, we report a case of focal dystonia of the right hand and forearm, with mirror movements produced in the right hand upon the use of left hand.

CASE REPORT
A 51 years old right-handed female developed difficulty in writing about a year ago, and reported problem in controlling the pen. She tried different ways of holding the pen between her fingers but she had little success. About 6 months ago, she started using her left hand because it became painful to use her right hand. She observed mirror movements in her right hand when she tried to write with her left hand. Furthermore, she also developed difficulty performing tasks which required fine motor control such as plucking her eyebrows and holding her fork. At times, her right hand involuntarily moved and cramped up.

The neurological examination confirmed that the patient had dystonia affecting mainly her right hand and forearm, though this was not limited to writing only. When she walked, there was posturing of both arms and there was neck tilt to the right and slight head turn to the left. There were mirror movements in the right hand when she was writing with her left hand. The movements were not consistent and there were various postures that the hand would assume including flexion of fingers, extension of the 3rd, 4th and 5th digits, flexion of the wrist and pronation of the wrist. However, there were no features of dystonia observed in her left hand.

MRI of brain was unremarkable. She was started on trihexyphenidyl 2 mg three times daily for 3 months, which helped her symptoms of dystonia. This allowed her right hand to function better, though writing still remained a problem. She no longer had the involuntary finger extension that she had before trihexyphenidyl was introduced.

DISCUSSION
Recently, studies have been conducted to understand the underlying basis for mirror dystonia. One such study

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indicated that Focal Hand Dystonia (FHD) may emerge from a deficient restriction of excitatory input from the contralateral hemisphere. This impairment is most likely due to deficient intramotor-cortical inhibition in the dystonic hemisphere. The study proved that interhemispheric inhibition (IHI) was diminished in surrounding muscles in patients with mirror dystonia, whereas it was preserved in patients with FHD without mirror dystonia. Thus, the loss of IHI may lead to the decrease in excitatory input from the contralateral hemisphere, which can cause mirror dystonia.

Currently, the diagnosis of dystonia is difficult and often delayed due to various reasons. First, the clinical appearance of primary dystonia is varied. Also, non-primary cases are more challenging to diagnose because the clinical presentation may show atypical features of dystonia which may be intermixed with additional clinical signs. Secondly, previous studies have indicated that the presentation of certain secondary dystonias is different from the typical primary dystonia. Lastly, various conditions which exhibit sustained postures are often incorrectly labelled as dystonia. The present case report highlights the awareness of focal limb dystonia with mirror movements, by adding to the literature on the symptoms associated with this particular pathological condition.

As per the treatment of FHD, various options are available and being tested. For example, various neurohabilitation methods for the treatment of focal dystonias have been suggested. Using the method of sensory motor retuning, researchers have been able to generate alterations in the functional organization of the somatosensory cortex. In doing so, patients with certain focal dystonias have been successfully treated. In addition, the use of botulinum toxin for treating dystonias has remained a successful option in many cases. However, studies have indicated that botulinum toxin A is much more effective at treating primary limb dystonia, compared to secondary limb dystonia.

REFERENCES


