Case Reports

Fixed Dystonia of the Left Hand in a Violinist: a Rare Functional Disorder

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Abstract

Background: Fixed dystonia leads to an immobile abnormal posturing of the affected limb. There is an ongoing debate whether this condition is psychogenic in origin.

Case report: We present a 21-year-old violinist with fixed dystonia after an acute overuse injury with a transient cyanosis but no signs for psychological trauma. After Incobotulinumtoxin injection, symptoms subsided within 8 hours.

Discussion: Our case corroborates the notion that fixed dystonias after minor injuries are functional disorders. It underlines the necessity of a biopsychosocial approach to functional disorders, considering the possibility of an overlay between organic and non-organic disorders.

Keywords: Fixed dystonia, musician, psychogenic, task specific, hyperkinetic movements

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Introduction

Musician’s dystonia (MD) is a task-specific movement disorder that leads to involuntary cramping with an abnormal posturing of the affected limb when playing an instrument.1 Fixed dystonia (FD) is a rare manifestation of dystonia that leads to a permanent and immobile abnormal posturing of the affected limb. Its pathophysiology is not well understood; however, it is considered a typical presentation of a functional movement disorder, and risk factors and clinical features have been described.2 Here we present a female violinist aged 21 years who suffered from a FD of the left fourth and fifth fingers, which occurred after an injury and resolved within hours of botulinum toxin. This case is interesting for two reasons: first, the course of the disease with onset after a minor injury and a response to botulinum toxin treatment that is incongruous with treatment response in organic dystonia demonstrates that FD is very likely a functional disorder. Secondly, FD is extremely rare in musicians and to our knowledge has not been reported so far.

Case report

The patient developed symptoms at the age of 20 years. After playing an Irish traditional music concert that lasted for 5 hours she perceived an involuntary cramping and adduction of the fifth finger of the left hand with cyanosis of the hand. After Incobotulinumtoxin injection, symptoms subsided within 8 hours. The patient has no history of other functional disorders. After the incident, she consulted a neurologist who diagnosed a functional dystonia (FD) of the left fourth and fifth fingers. Further investigations were normal, including brain imaging. The patient was referred to a neurologist for further evaluation. The patient’s medical history revealed two previous episodes of incoordination of the same fingers, which however never turned into a FD. The first episode was in 2008 during a music competition for which she had practiced 6 hours per day and developed a pain syndrome. However,
at that time a complete remission occurred under analgesic treatment after 2 weeks. The second episode was in October 2010, again during a time of increased violin playing of up to 10 hours per day, as a result of which she again developed a pain syndrome. Complete remission then occurred after 5 weeks under anesthetic treatment. Family history with regard to neurological disorders was negative.

On neurological examination the hypertonus of the flexor muscles of digits 4 and 5 of the left hand became apparent, leading to the fixed posturing. There was no giving-way of muscle tone upon distraction. Violin playing was not possible. There were no sensory deficits, no paresthesia/hypesthesia, and no hyperalgesia/allodynia. Reflexes were normal. There were no signs of edema or abnormal skin blood flow. No Kayser-Fleischer ring was present. Previous history of neuroleptic medication was negative, ruling out a tardive dystonia. Spinal and cerebral magnetic resonance imaging (MRI) scans (T1, T2 with and without contrast) were normal. Blood results including coeruleoplasmin, liver profile, vitamin B12, folate, and Lyme serology did not reveal any pathology. There were no previous somatizations in the past, no evidence of a depressive episode or of depression in the past, and no evidence of previous psychological trauma or a secondary benefit.

No improvement was noticed after splinting of the hand for several days, physiotherapy (several times), and acupuncture (twice). L-Dopa+carbidopa (100 mg+25 mg) for 6 weeks, diazepam (10 mg) for 1 week, or local anesthetics (once) did not result in improvement either. Pramipexol (0.088 mg) was not tolerated. We injected 15 MU of Incobotulinumtoxin into the superficial muscle of the fourth and fifth fingers of the left hand as well as 10 MU to the third palmar interosseus muscle. The patient reported a tremendous improvement within 8 hours of injection, which started with a paresthesia (pins and needles) of digits 4 and 5 and led to an almost complete remission within the first days. The effect wore off over the course of about 8–10 weeks, leading to a task-specific dystonic cramping of digit 5 while at the instrument but leaving digit 4 almost normal (Video 1). FD did not reappear.

**Discussion**

We present the rare case of FD of the left hand in a violinist with the typical manifestation of FD in the fourth and fifth digit and the absence of a sensory trick. Yet FD is a rare and unusual manifestation of musician’s dystonia (MD). Most often MD is task specific dystonia (TSD) and occurs only in the context of playing the instrument. Its typical feature is an involuntary flexion and less often an extension of the affected fingers. In wind instrument players the embouchure may be affected, resulting in involuntary movements of the lips, the tongue, or the jaw. Age of symptom onset is usually in the mid thirties and thus higher than in our patient. In MD, however, the most frequent combination of two affected fingers is digits 4 and 5, as seen in our patient. One risk factor of MD that has been described is pain due to overuse in up to 9% of patients. The same risk factor is known in FD, where the incidence of pain is considerably higher and occurs in up to 68% of patients. This is in accordance with our patient who had practiced intensely and for up to 8 hours per day for several weeks prior to symptom onset and consequently developed an acute overuse syndrome. She had had two prior episodes of incoordination 3 years and 1 year ago, which all appeared under similar circumstances of long, intense practice and playing sessions of up to 10 hours per day with a subsequent pain syndrome. However, symptoms always ceased under medication and a break from violin playing. In the context of pain syndromes, the relationship between chronic regional pain syndrome (CRPS) and FD has been repeatedly described. Up to 25% of CRPS patients develop FD and 91% of movement disorders in CRPS are dystonia, of which 75% have FD. It is thus noteworthy that the third episode leading to the FD was
accompanied by transient cyanosis of the affected hand, one main feature of CRPS.\textsuperscript{20} At clinical examination the criteria for a CRPS were not fulfilled;\textsuperscript{20} however, this finding is in accordance with reports by Schrag et al,\textsuperscript{2} who found features of CRPS in 44\% of patients with FD but only 20\% fulfilled the criteria for CRPS.

The most striking feature was the patient’s report on an improvement within 8 hours of botulinum toxin injection with an almost complete remission of symptoms within the first days, although anecdotal evidence exists of patients reporting an effect of botulinum toxin within hours. This tremendous improvement is in contrast with reports of a bad outcome of FD accompanied by CRPS features.\textsuperscript{21} This of course raises the question of a possible psychogenic origin of the dystonia. Schrag et al\textsuperscript{2} reported that 36\% of patients with FD had a clinically established psychogenic dystonia. Furthermore, the ratio of somatization or conversion disorders was significantly higher in FD than in a control group with non-FD.\textsuperscript{3} Likewise a study reporting on 28 patients with psychogenic movement disorders found that dystonia was the second most common manifestation.\textsuperscript{22} In one study by Lang\textsuperscript{23} of 18 patients with psychogenic dystonia, 61\% had had a peripheral trauma in the past, and in a recent paper it was concluded that FD after peripheral trauma is a psychogenic disorder.\textsuperscript{24} However, another study did not find convincing evidence for a psychogenic genesis of CRPS-related dystonia.\textsuperscript{25} Finally, psychogenic or functional dystonia is more common in young women after a minor trauma.\textsuperscript{3} However, there was no previous history for somatization. Nor did she display any signs for a depression, which besides anxiety is the only psychiatric disorders, or somatization from our point of view does not have to be necessarily present in functional movement disorders.\textsuperscript{3,26,28} Our case underlines the necessity of considering a biopsychosocial approach to functional disorders\textsuperscript{3,26,28} that include environmental factors such as, for example, trauma and take into account the possibility of an overlay between organic and non-organic disorders due to the common occurrence of injury and functional symptoms.\textsuperscript{3,28}

### References


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