

Smoking Induced Worsening of Myoclonic Dystonia due to Haloperidol: A Case Report

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ABSTRACT

Acute dystonia is a side effect of antipsychotic medication, and appears shortly after beginning treatment. The movement disorder is characterized by sustained muscle contractions that are typically slow, but rapid dystonia referred to as myoclonic dystonia has also been described. Cranial, pharyngeal and cervical muscles are generally affected causing fixation of the jaw, retrocollis, torticollis or opisthotonic posturing. Acute laryngeal dystonia (laryngospasm) with dysphonia has rarely been reported. Although known for six decades, the mechanism underlying acute dystonia is not clearly understood. It has been reported to be associated with striatal dopaminergic and cholinergic dysfunction due to the D2 receptor blockade of antipsychotics in the basal ganglia. We discuss a patient with haloperidol-induced atypical myoclonic dystonia that got worse with smoking together with the role of the cholinergic system in acute dystonia in this case report.

Keywords: antipsychotic, dystonia, nicotine

ÖZET

Sigara İçmeyle Kötüleşen, Haloperidole Bağlı Miyoklonik Distoni: Bir Olgu Sunumu

Akut distoni, antipsikotiklerle tedavi başladıktan kısa süre sonra ortaya çıkan bir yan etkidir. Uzun süre kas kasılmalarıyla karakterize bu hareket bozukluğu tipik olarak yavaş olmakla birlikte, miyoklonik distoni olarak tanımlanan hızlı distoniler de tanımlanmıştır. Genellikle çenede kilitlenme, retrokollis, tortikollis ya da opistotonusa neden olacak şekilde baş, boyun veya faringeal kaslar etkilenir. Ancak ses tonunda bozulmalarla birlikte olan akut laringeal distoniler de nadiren rapor edilmiştir. Altmış yıldır biliniyor olmasına rağmen, akut distoninin altında yatan mekanizma hâlen açıkça anlaşılamamıştır. Ancak, antipsikotiklerin bazal ganglionlarda D2 reseptörlerini bloke etmesine bağlı olarak ortaya çıkan striatal dopaminerjik ve kolinerjik fonksiyon bozukluklarıyla ilişkili olduğu bildirilmiştir. Bu olgu sunumunda, haloperidole bağlı gelişen ve sigara içmekle artan atipik distonili bir hasta sunulmuş ve akut distonide kolinerjik sistemin olası rolü tartışılmıştır.

Anahtar kelimeler: antipsikotik, distoni, nikotin

INTRODUCTION

First generation antipsychotics have been a revolutionary development in the treatment of psychiatric disorders but motility disorders are the most important problem limiting their use. This motility disorder usually affects the head, neck and facial muscles. Laryngeal and pharyngeal muscle involvement has rarely been reported (Sachdev 2005).

Acute dystonia has been reported to be associated with dopamine blockage, the common effect of classical antipsychotics (Diederich and Goetz 1998). The dopamine-acetylcholine interaction at the striatal region is the junction of the neuronal transmitter traffic in the basal ganglia. Antipsychotic-related dystonias can be easily treated with biperiden although the exact mechanism is unknown.

Smoking and nicotine are also thought to possibly play a role in the pathophysiology of dystonia. Nicotine has been reported to correct dystonia in two cases and make it worse in another two cases (Lees 1984, Murase et al. 2000, Vaughan et al. 1997). A clinical study on 45 schizophrenia patients has found smoking to reduce the rate of Parkinsonism developing due to antipsychotics (Demir et al. 2002).

We discuss the pathophysiology of dystonia using a schizophrenic patient with atypical myoclonic dystonia caused by haloperidol and increased by smoking.

CASE

MNK was a 34-year-old male patient and had been admitted to hospital approximately 14 years ago with a diagnosis of schizophrenia. He had used antipsychotics such as haloperidol, risperidone and sulpiride for psychotic exacerbation at various times. Risperidone and sulpiride had been recommended following the motility disorder that started immediately after haloperidol initiation but the patient had not wanted to use these drugs due to their sexual side effects and financial reasons. He had been continuing his treatment with haloperidol (5 mg/day) for the last 4 years. However, he was experiencing side effects such as involuntary movements of the head and face, difficulty speaking, coarse voice, shortness of breath and difficulty swallowing. A clinic he had visited a year ago had interpreted the motility disorder as a tic and increased the haloperidol dose to 10 mg but the patient had decreased the dose himself when the involuntary movements increased. He had frequently tried to discontinue the medication due to these involuntary movements and the movements had resolved when he stopped haloperidol and took biperi-

den for two days. However, he had been forced to continue his previous medication due to increased auditory hallucinations and delusions. The movements made it more difficult for him to fall asleep but disappeared during sleep. The movements increased when he smoked. He presented at our clinic with these symptoms and had no complaint related to his main disorder other than rare auditory hallucinations.

The sudden and rapid (myoclonic) muscle contractions in the oral, facial and neck region made communication difficult. These tic-like involuntary contractions were accompanied by jerks of the arms and closure of both eyes (blepharospasm). The voice suddenly became coarse with changes in voice tone such as nasal speech while speaking. The physical and neurological findings were normal other than the movement disorder. The EEG, MR and biochemical tests were normal. The patient was admitted and evaluated with the Abnormal Involuntary Movement Scale (AIMS). The score was 17 before smoking and 24 afterwards.

The movement disorder gradually decreased and almost fully resolved within 3 days when haloperidol was discontinued and biperiden started (AIMS score: 4). The patient continued to smoke and he was discharged with no symptoms regarding the movement disorder after clozapine was started. No movement disorder was seen at 6-monthly follow-ups.

DISCUSSION

Movement disorders are seen as a side effect of many psychotropic drugs but are also a side effect of first generation antipsychotic drugs such as haloperidol that are potent dopamine D2 receptor blockers. Acute dystonia caused by antipsychotics is in the form of short-term, slow and involuntary, intermittent or continuous simultaneous contractions of antagonistic muscles. This can be in various forms such as torticollis, retrocollis, opisthotonus, oculogyric crisis, jaw opening-closing movements, and diaphragm contractions and can rarely be dangerous (Sachdev 2005). It has been emphasized that the rare involvement of laryngopharyngeal muscles can be fatal (Christodoulou and Kalaitzi 2005). The inability to breathe from the nose, sudden and short-term changes in the voice and difficulty swallowing were interpreted as due to laryngopharyngeal muscle involvement in our case. Our case also had a history of potent antipsychotic (haloperidol) usage as in other laryngeal dystonia cases reported previously.

Besides the slow dystonias that appear as long-term and abnormal postures, dystonias named myoclonic dystonias seen as sudden rapid contractions are

also reported with antipsychotics (Sachdev 2005). The motor movements that were repeated at various speeds and increased with haloperidol and previously reported as tics in a case report were evaluated to be due to dystonia and it was emphasized that these two conditions could lead to diagnostic confusion (Wasserstein and Honig 1992). The sudden and rapid muscle contractions at the head, neck and face in our case first looked like tics. The patient had previously been thought to have a tic disorder by a physician and the movement disorder had become worse when the haloperidol dose was increased. The complete resolution of the movement disorder when haloperidol was discontinued and biperiden started at our clinic indicates that it should be interpreted as myoclonic dystonia.

The pathophysiology of dystonias has not been fully understood but a change in dopamine receptors is the most often blamed mechanism (Perlmutter and Mink 2004). A decreased number of dopamine D2 receptors in the caudate/putamen and the compensatory dopamine secretion increase are some of the explanations used for the dystonia (Carbon et al 2009). Antipsychotics are partially responsible for acute dystonia as they block D2 in the caudate, putamen and globus pallidus (Rupniak et al. 1986). However, the cholinergic system is also known to be associated with the etiology of dystonia (Martella et al. 2009). Antipsychotics and cholinergic drugs increase focal or diffuse dystonia while anticholinergics decrease the problem, a fact that may be explained by the dopamine-acetylcholine antagonism at the basal ganglia (van Harten et al 1999). The development of dystonia in a patient using the acetylcholine esterase inhibitor rivastigmine also supports a relationship between increased cholinergic transmission and dystonia (Pavlis et al. 2007). Increased dystonia with smoking indicates that the dopamine-acetylcholine balance was disturbed in the patient due to increased cholinergic activity.

Dystonia is also explained with a disturbance in the coordination of motor functions due to a problem with the sensorimotor cycle related to motor learning and memory (Peterson et al 2010). Hyperactivity of the premotor cortex that receives projections from the basal ganglia through the ventral thalamus can also result in dystonia. Smoking leads to decreased sensory gating problems and increased attention in schizophrenic patients. Increased attention to stimuli and increased corticostriatal and thalamostriatal afferents may contribute to the condition by influencing interneuronal discharges.

Although a primary dystonia case with increased symptoms following smoking has recently been reported (Prashantha and Pal 2009), there have been no

reports on the effect of smoking in secondary dystonia due to antipsychotic usage. It is interesting that the clinical signs such as multifocal involvement, dysphonia and speech disorder in the previous case report were also present in our case. Considering the rapid and repetitive myoclonic dystonia accompanied by speech disorder and the negative influence of smoking in our case, it is possible that this dystonia subtype may have a different pathogenesis than other dystonias characterized by slow and maximum contractions. We therefore feel that this case could be important in elucidating the role of smoking in dystonia etiopathology.

In conclusion, this case is important as it demonstrates an effect of smoking on the dystonia developing secondarily due to antipsychotic usage. We believe it will be beneficial for clinicians to evaluate the use of smoking when dystonia develops in patients using antipsychotics. Detailed clinical investigations on this subject in addition to case reports could also be important in explaining the role of smoking in the development of dystonia.

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