

OLANZAPINE INDUCED STUTTERING: A CASE REPORT

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INTRODUCTION

Drug-induced stuttering has been described in association with several drugs, in particular antipsychotics, antidepressants and mood stabilizers. Stuttering, also called spasmophilia or stammering, is a speech disorder characterized by disruptions in speech motor behaviour (repeated or prolonged articulatory and phonatory actions) that result in sound and syllable repetitions, audible and inaudible sound prolongations and broken words (Craig-McQuaide et al. 2014, Kozmin-Burzynska et al. 2015). Stuttering has been associated with dopaminergic hyperactivity. Stuttering as a side-effect of psychotropic medication is rare. Some psychotropic medication may result in improved fluency. The precise mechanism is unclear; however, various theories have been put forwards, by authors Alm (2004), Stager et al. (2005), Shaygannejad et al. (2013), and Wu et al. (1997). Drug-induced stuttering has been described in association with both first generation and second generation antipsychotics (Yadav 2010). A review of drug-induced stuttering has also been published (Brady 1998). Antipsychotic medications have shown some efficacy in controlling stuttering symptoms. Although olanzapine has shown to reduce the severity of stuttering, a few case reports of olanzapine inducing stuttering have been published. We now present a case of olanzapine-induced stuttering.

CASE REPORT

T.S., a 42 year old male, was admitted to the Department of psychiatry because of worsening symptoms of post-traumatic stress disorder and adjustment disorders. He had served in a combat unit during a war and experienced a serious traumatic event. Very soon after the war ended, he was diagnosed with PTSD and treated with SSRI antidepressants, benzodiazepines, with quetiapine and promazine. His medical history was otherwise unremarkable. No episode of stuttering had been documented previously. He had been treated with venlafaxine (150mg/day) and promazine (200mg/day) for more than 6 months prior admission to our hospital. Along with depressed mood and apathy, he displayed agitation and complained of persistent insomnia. Because of paranoid ideation olanzapine (10 mg/daily) was introduced for the first time, together with the

existing medication. Four days later, he developed progressive stuttering of unclear origin. His dysfluency of speech was characterized by repetition and retention of first syllables and prolongation of phonemes. He produced words with an excess of physical tension. He was not confused or cognitively impaired during stuttering. It was obvious regardless aggravating factors. Neurological and otorhinolaryngology examination were unremarkable, as well as most investigations: the results of a complete blood count, basic metabolic profile, erythrocyte sedimentation rate, coagulation profile, liver function tests and routine urine analysis were normal. No abnormality was detected on computed tomography of the head. EEG was completely normal. Olanzapine was discontinued, and the stuttering ceased completely after two days. This case report highlights olanzapine as being possibly associated in the pathogenesis of stuttering, although the precise mechanisms remain unclear.

DISCUSSION

There are two main types of stuttering, developmental and acquired. Acquired stuttering can occur at all ages, has a sudden onset and is almost always associated with gross impairment of brain function, as from a stroke, head trauma, brain tumor, or other insult to the brain (Yadav 2010). When the patient reported of stuttering, acquired causes of stuttering were ruled out by carrying out a detailed physical examination and investigations. Acquired stuttering from pharmacological agents is rare. In our case the patient developed stuttering four days after starting with olanzapine. After olanzapine was discontinued, the patient showed significant improvement both in the fluency and anticipatory anxiety with decreased repetitions, blocking, interjections and broken words. After two days the stuttering ceased completely. It is possible that stuttering was a consequence of the direct influence of olanzapine on speech, but also that olanzapine induced stuttering by influencing the pharmacokinetic properties of promazine or venlafaxine.

Etiology of stuttering is still unclear. Stuttering has been associated with dopaminergic hyperactivity. Such a role has already been suggested directly by an increase in 6-FDOPA activity in the caudate tail (Wu et al. 1997) and indirectly by other imaging studies, fluency-evoking conditions involving rhythm and timing, lesion

studies, genetics and developmental changes of the nervous system (Alm 2004). Stuttering is associated with an overactive presynaptic dopamine system in brain regions that modulate verbalization (Wu et al. 1997). It is proposed that the basal ganglia-thalamo-cortical motor circuits through the putamen are likely to play a key role in stuttering. The core dysfunction in stuttering is suggested to be impaired ability of the basal ganglia to produce timing cues for the initiation of the next motor segment in speech (Alm 2004).

Olanzapine was reported to be beneficial in reducing the symptoms of acquired neurogenic stuttering (Catalano et al 2009). Although olanzapine has shown to reduce the severity of stuttering, it could also induce stuttering. A case series of six patients suffering from stuttering in association with olanzapine treatment is published (Bar et al. 2004).

CONCLUSION

A few case reports found olanzapine useful in the treatment of stuttering symptoms. However, as highlighted in this case report, olanzapine can also induce stuttering. Further research is needed to fully clarify the pathophysiology of this speech disorder and to elucidate the mechanism of drug induced stuttering.

Contribution of individual authors:

Davor Lasić was involved with conception and design, manuscript preparation and writing the paper; Marija Žuljan Cvitanović was involved with the patient's care, data collection and manuscript preparation; Silvana Krnić was involved with writing the paper; Boran Uglešić was involved in manuscript preparation, reviewed draft manuscript, collecting data, interpretation of data, writing the paper.

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