

Case Reports

Sertraline-induced Hemichorea

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Abstract

Background: Hemichorea–hemiballism is a syndrome secondary to different etiologies. Drug-induced hemichorea is a rare syndrome related to selective serotonin reuptake inhibitors. To the best of our knowledge, no previous cases of hemichorea associated with sertraline have been reported.

Case Report: A 65-year-old female noticed hemichorea 1 week after initiation of sertraline. After extensive investigations, other causes of hemichorea were excluded. Hemichorea remitted after sertraline withdrawal.

Discussion: In our patient, temporal association and the negative clinical assessment supported a diagnosis of likely drug-induced involuntary movement. We hypothesized that enhanced serotonergic transmission in the ventral tegmental area or nigrostriatum may be involved in sertraline-induced hemichorea.

Keywords: Hemichorea, selective serotonin reuptake inhibitors, sertraline, chorea, sertraline, hemichorea

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Introduction

Hemichorea–hemiballism is a spectrum of involuntary, non-patterned movement involving one side of the body. It usually results from a lesion in the contralateral basal ganglia structure, but it is also a well-recognized complication of several conditions, including non-ketotic hyperglycemia and polycythemia vera.¹

Although induced parkinsonisms and other hyperkinetic movement disorders are repeatedly reported with selective serotonin reuptake inhibitors (SSRIs),^{2,3} drug-induced hemichorea has rarely been reported^{4–9} (Table 1). Herein we report a case of hemichorea induced by sertraline. To the best of our knowledge, no previous cases of sertraline-induced hemichorea have been reported in the literature.

Case report

A 65-year-old right-handed Argentinean female was diagnosed with depression and was started on sertraline 50 mg per day. One week later, she developed involuntary movements involving the left upper and lower limbs.

Twenty-four hours later she was admitted into our institution. Physical examination revealed hemichorea on the left side, but the rest

of the neurological and clinical examination, including the Mini Mental Status Examination, was unremarkable.

The patient's past medical history included smoking (more than 40 cigarettes/day), hiatus hernia, and irritable bowel syndrome. She had no other significant disorders involving the central, peripheral, or autonomic nervous systems. Her family history was non-contributory and no additional medications were taken in the previous 6 months, even for irritable bowel syndrome.

A 1.5 Tesla brain magnetic resonance imaging scan including diffusion-weighted images and magnetic resonance angiography (MRA) was performed 48 hours after the initial symptoms, and no acute lesions or relevant abnormalities were identified (Figure 1). Routine blood tests demonstrated no abnormalities in the full blood count (hemoglobin, 13.2 g/dL; hematocrit, 39.20%) and liver or renal function. Thyroid function, blood glucose, calcium, magnesium, phosphate, serum ceruloplasmin, vitamin D, and parathyroid hormone levels were all normal. Serum carcinoembryonic antigen, cancer antigen (CA) 15.3, CA 19.9, CA 125, paraneoplastic antibodies (anti-Yo, anti-Hu, anti-Ri), p-Antinuclear and anticytoplasmic antibodies (ANCA) and c-ANCA, anti-transglutaminase, anti-gliadin, and anti-endomysium antibodies, anti-nuclear antibody,

Table 1. Cases Reported in the Literature of Drug-induced Hemichorea

Sex/Age (years)	History	Hemichorea	Brain MRI	Drug	Mechanism of Action	References
M/41	None	Right	Normal	Gabapentin	Binds to many transmembrane sites within the central nervous system embracing the α -2- δ subunit of the voltage-gated calcium	Lai et al. ⁸
F/76	Alzheimer disease	Right upper limb Dystonia left lower limb	NA	Memantine	Non-competitive antagonist of NMDA receptor, dopaminergic action at high doses	Borges et al. ⁴
F/92	Hypertension	Right	Normal	Zolpidem/zopiclone	Agonist GABA A	Watari and Tokuda ⁹
F/17	Irregular menstrual cycle	Right	NA	Oral contraceptive pills (ethinyl estradiol and cyproterone acetate)	Competitive inhibition of the binding of testosterone and dihydrotestosterone to androgen receptors Dopaminergic action at high doses	Shamila and Babu ⁶
M/53	Hypertension Right frontal hemorrhage	Left	Right frontal hemorrhage	Valproate	Inhibitory GABA, excitatory NMDA receptor and sodium channel pathways	Srinivasan and Lok ⁹
F/65	Depression	Left	Normal	Sertraline	Selective serotonin reuptake inhibitor	Present case, 2017

Abbreviations: GABA, Gamma-aminobutyric Acid; MRI, Magnetic Resonance Imaging; NA, Not Available; NMDA, N-methyl-D-aspartic Acid.

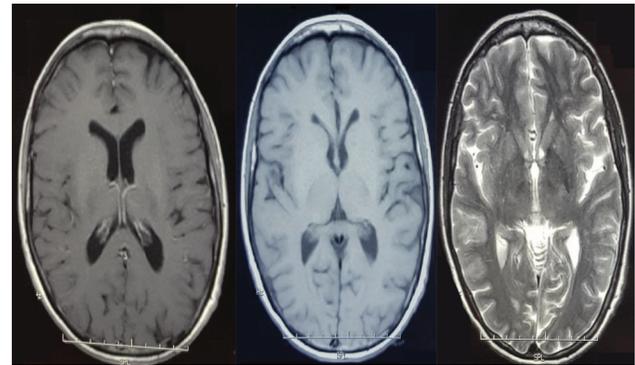


Figure 1. 1.5 Tesla Brain Magnetic Resonance Imaging. (A) T1-weighted sequences. (B) T2-weighted sequences. (C) Fluid attenuation inversion recovery (FLAIR)-weighted sequences.



Video 1. Sertraline-induced Hemichorea. Segment 1. Patient at the initial examination with hemichoreatic movement involving the left hemibody. **Segment 2.** Patient 1 month after initial presentation with clinical improvement.

anti-cardiolipin antibody, and HIV serology were negative. To exclude other systemic causes, chest, abdominal, and pelvic computed tomography (CT) scans were performed, which were normal. Carotid ultrasound, echocardiogram, and upper and lower endoscopy were normal.

Cerebrospinal fluid analysis was unremarkable, and onconeural antibodies were negative (anti-Yo, anti-Hu, anti-Ri, anti-N-methyl-D-aspartic acid receptor, anti-Antigliutamate receptor (AMPA subtype1), anti-Antigliutamate receptor (AMPA subtype2), anti-Contactin associated protein 2 (CASPR2), anti-Leucine rich glioma inactivated 1 (LGI 1), gamma-aminobutyric acid B-receptor (GABAB-R), collapsin response mediator protein 5 (CRMP5)). As no other etiologic agents were identified, sertraline was discontinued and the involuntary movements gradually disappeared over 7 days.

The patient was diagnosed with a probable sertraline drug-induced hemichorea. See video, segment 1: basal examination, segment 2: evaluation one month after initial presentation and sertraline withdrawal.

Discussion

We present a patient with hemichorea related to sertraline therapy. Sertraline is a SSRI, commonly used in depression.¹⁰ According to the pharmaco-epidemiological data by the US Food and Drug Administration, only 10% of all SSRI-induced movement disorders have been reported to be secondary to sertraline,¹¹ particularly in those cases with concomitant medications.^{11,12}

The most common movement disorders induced by sertraline included tremor, dystonia, and akathisia.¹² However, to the best of our knowledge, no previous chorea or hemichorea cases associated with sertraline have been previously reported.

The mechanism by which SSRI could induce movement disorders remains to be elucidated.¹³ Two possible mechanisms have been proposed. The first suggested that sertraline is able not only to inhibit serotonin reuptake but also to exert a mild dopaminergic inhibition in the ventral tegmental area and nigrostriatal pathway.¹⁴ The second hypothesis proposed a genetic mechanism involving serotonin or dopamine receptor polymorphisms or cytochrome P450 phenotypes.¹⁵ These two hypotheses may explain the usually bilateral acute or tardive symptoms; however, it remains to be elucidated why hemichorea rather than generalized chorea occurred in this case.

Several concomitant and previous conditions could contribute to increase the susceptibility for developing hemichorea. In our patient we ruled out chorea gravidarum, post-streptococcal chorea, auto-immune-mediated hemichorea, polycythemia vera, and vascular and structural causes, among others.¹

While in this case a personal history of smoking could be observed as a risk factor for hemichorea development, in the literature only one case of smoking was reported as a worsening and non-primary causal factor in a 65-year-old hypertensive male with a right putamen hemorrhage.¹⁶ In our patient, smoking did not seem to be involved in the pathogenesis of the hemichorea. Therefore, the acute appearance of hemichorea and the recent administration of sertraline, after excluding other possible causes of acquired hemichorea, suggest a probable drug-induced mechanism.

Although the extended use of sertraline revealed a safe profile in daily doses ranging from 50 to 200 mg, it is important to keep in mind that this drug may induce hemichorea, albeit very rarely.

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