Withdrawal Dyskinesia in the Setting of Lurasidone and Amphetamine Coadministration

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Background

Withdrawal dyskinesia (WD), which may be considered a subtype of tardive dyskinesia, is a potential complication of neuroleptic tapering or discontinuation. WD in the setting of concomitant stimulant use and neuroleptic discontinuation has been most often described in pediatric cases, but literature regarding similar cases is adults is sparse.

Case

We present the case of a 60-year-old female with a medical history of incontinentia pigmenti (IP), psoriatic arthritis, and chronic constricted adductor spasmodic dysphonia and a psychiatric history of mood disorder due to general medical condition, generalized anxiety disorder, attention-deficit/hyperactivity disorder (ADHD), and antipsychotic sensitivity (development of extrapyramidal symptoms) who presented to the hospital for involuntary movements. She described the movements as generalized shaking for three weeks that began after her lurasidone was decreased from 60mg to 30mg and lamotrigine was started. She was also taking mixed amphetamine salts for her ADHD and amantadine for possible facial dyskinesias. On examination, she had tremor and dyskinesia along with intermittent visual hallucinations (VH) of bugs and sparkles. An MRI was obtained, which demonstrated frontal lobe encephalomalacia due to IP seen on prior imaging. Propranolol was started without symptom improvement. Subsequently, lurasidone was increased to its previous dose and stimulants were stopped, which resulted in the resolution of her symptoms. She was discharged, and she remained asymptomatic at follow up.

Fig. 1A

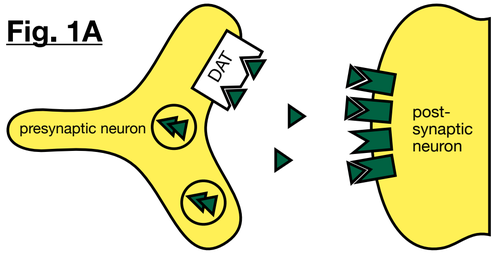


Fig. 1B

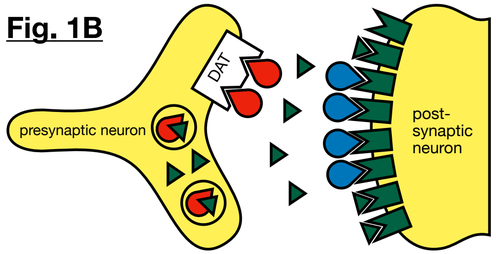
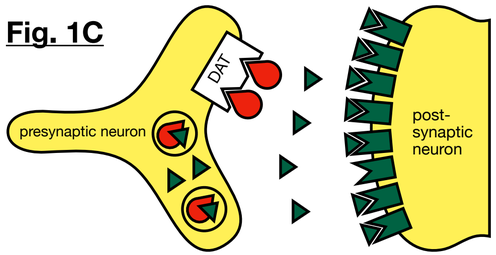


Fig. 1C



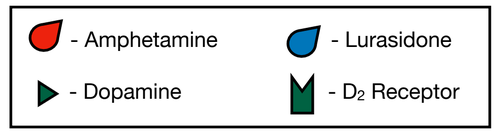
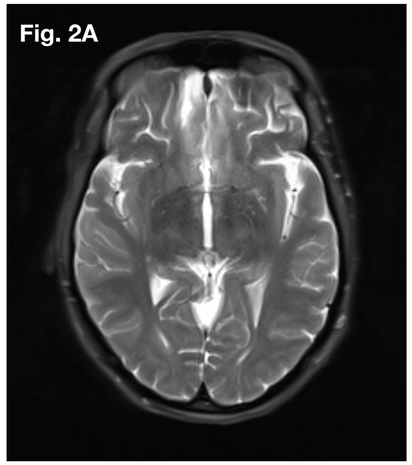
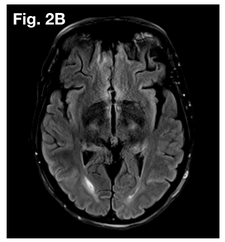


Figure 1A. Baseline levels of dopamine and D_2 receptor.
Figure 1B. Up-regulation of D_2 receptor in the setting of chronic antipsychotic exposure along with increased synaptic dopamine due to the action of amphetamine.
Figure 1C. Excessive D_2 receptor activation in the setting of rapid lurasidone taper, exacerbated by an increased synaptic dopamine caused by amphetamine.





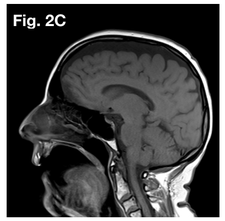


Figure 2A. T2-weighted axial magnetic resonance imaging demonstrating bilateral frontal lobe encephalomalacia, which could represent remote insult to the brain versus ischemic events associated with incontinentia pigmenti.
Figure 2B. Fluid attenuated inversion recovery (FLAIR) sequence axial MR imaging demonstrating bilateral frontal lobe encephalomalacia.
Figure 2C. T1-weighted sagittal MR imaging demonstrating predominantly frontal lobe age-associated cerebral atrophy.

Discussion and Conclusion

Increased D2 receptor availability and sensitivity after prolonged antipsychotic exposure is a proposed mechanism for WD. Such receptor changes combined with antipsychotic dose reduction (increased receptor availability) and stimulant activation would explain this patient's WD and may also explain her VH (i.e. supersensitivity psychosis). Notably, this patient had several risk factors for the development of WD including previous stroke, frontal lobe encephalomalacia, previous antipsychotic sensitivity, age, and concomitant use of stimulants and neuroleptics. This report raises the possibility that the neurological complications of IP, a hereditary, congenital disorder, may be an under-recognized risk factor for WD across the lifespan. Furthermore, it is the first to our knowledge to describe WD in the setting of a lurasidone taper. Ultimately, this case highlights the need for caution when tapering antipsychotics in individuals with risk factors for WD.

References

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