What's in a Name? Parkinson-Hyperpyrexia Syndrome in a Patient with Tardive Dyskinesia

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INTRODUCTION

Parkinson-hyperpyrexia syndrome is nearly identical to neuroleptic malignant syndrome, with the only difference being its causative mechanism: rather than excessive antipsychotic administration, this condition is brought on by abrupt withdrawal of a medication which increases dopamine transmission, most typically levodopa-carbidopa.

Amantadine acts by multiple mechanisms, two of which include dopamine receptor agonism and dopamine reuptake inhibition. Amantadine withdrawal has been implicated in a few cases of Parkinson-hyperpyrexia syndrome.

Here we demonstrate a case of Parkinson-hyperpyrexia syndrome occurring after abrupt discontinuation of amantadine which was being used to treat tardive dyskinesia rather than Parkinson's disease.

CASE

LG is 53-year-old female with a history of hypertension, hypothyroidism, migraines, tardive dyskinesia, and bipolar 1 disorder who presented with progressive weakness and altered mental status for one week. She was found to have an elevated CK level of 611, fever of 103.1 F, and tachycardia, with diffuse rigidity in upper extremities on examination. Her home medications were lithium, oxcarbazepine, quetiapine, bupropion, clonazepam, temazepam, and amantadine, which the patient self-discontinued one week prior to arrival.

METHODS

Literature review was conducted by searching PubMed for case reports involving neuroleptic malignant syndrome or Parkinson-hyperpyrexia syndrome involving amantadine withdrawal.

RESULTS

Literature review revealed 5 case reports implicating amantadine withdrawal in Parkinson-hyperpyrexia syndrome.

All patients described in each case report had a previous diagnosis of Parkinson's disease.

In all 5 cases, patients demonstrated a reduced level of consciousness and rigidity, most had elevated CK levels, hyperthermia, and tachycardia.

Recovery occurred within 2-14 days, treatment typically involved re-initiation of amantadine in addition to supportive measures.

For our patient with tardive dyskinesia, re-initiation of amantadine led to full resolution of the Parkinson-hyperpyrexia syndrome by day 8.

RESULTS

References	Age/Sex	Time of PD	Clinical Manifestations	Onset (days)	Management	Outcome
Frymi et al	57 M	Unknown	Altered mental status, respiratory failure	2	Reinitiation of amantadine	Recovery in 2 days
Cheung et al	63 M	Unknown	Altered mental status, elevated CK, hyperthermia, tachycardia, tremor, rigidity	3	Reinitiation of amantadine, dantrolene, l-Dopa, bromocriptine	Recovery in 14 days
Bower et al	77 M	1 year	Altered mental status, elevated CK, hypertension, tachycardia, hyperthermia, rigidity	1	Reinitiation of amantadine, l-dopa	Recovery in 10 days
Simpson and Davis	50 M	Unknown	Altered mental, hyperthermia, rigidity	2	Dantrolene and clinical support	Recovery in 14 days
Santos et al	79 F	19 years	Altered mental status, elevated CK, tachycardia, rigidity	1	Reinitiation of amantadine	Recovery in 10 days

DISCUSSION

Among reported cases of Parkinson-hyperpyrexia syndrome which involve amantadine withdrawal:

- Only one other case involved a female patient.
- There was a broad range of clinical presentations, recovery times, and other antiparkinsonian agents being used.
- There appears to be no direct link between prior amantadine dosage and time to recovery. All patients eventually recovered.

Our case is the only example we could find of Parkinson-hyperpyrexia syndrome occurring in someone not previously diagnosed with Parkinson's disease, suggesting a limitation of the nomenclature for this diagnosis.

Since dopaminergic medications like amantadine can be used to treat the extrapyramidal symptoms caused by antipsychotic administration, abrupt withdrawal of these dopaminergic medications can also cause a neuroleptic malignant-like syndrome like those seen in Parkinson-hyperpyrexia syndrome, regardless of whether an underlying Parkinson's diagnosis is present.

This case demonstrates the importance of identifying dopaminergic medication withdrawal as the possible cause of neuroleptic malignant-like syndromes, and the need for slow tapering of such medications.

REFERENCES

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