

Serotonin Syndrome and Neuroleptic Malignant Syndrome: A Mixed Case Following Antidepressant/Antipsychotic Overdose

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Received: November 02, 2025; **Accepted:** November 10, 2025; **Published:** November 20, 2025

Background: Serotonin Syndrome (SS) and Neuroleptic Malignant Syndrome (NMS) are life-threatening conditions with overlapping features, including altered mental status, autonomic instability, and hyperthermia. Despite clinical similarities, their pathophysiology differs: SS arises from excessive central serotonergic activity, while NMS results from dopamine receptor blockade, typically due to antipsychotic use.

Case History: A 71-year-old male with a history of depression and benign prostatic hyperplasia presented with restlessness, insomnia, and confusion. Medication adjustments two weeks prior included an increase in escitalopram (20 mg to 40 mg/day), initiation of olanzapine (2.5 mg/day), and continuation of clomipramine (75 mg/day) and alprazolam. Brain CT and angiography were normal. The subacute symptom onset, medication profile, and clinical picture suggested a mixed SS/NMS. All psychotropic drugs were discontinued. The patient was treated with short-acting benzodiazepines and antihypertensives (e.g., esmolol), without specific antidotes.

Table 1: Hunter Criteria for Diagnosing Serotonin Syndrome VS Criteria for Diagnosis of NMS

• Hunter Criteria for Diagnosing Serotonin Syndrome

| Presence of primary symptom | Secondary symptom if necessary | Diagnosis confirmed by criteria |
|----------------------------------|-----------------------------------|---------------------------------|
| Spontaneous clonus | – | Yes |
| Inducible clonus | Agitation or diaphoresis | Yes |
| Ocular clonus | Agitation or diaphoresis | Yes |
| Tremor | Hyperreflexia | Yes |
| Hypertonic and Temperature >38°C | Ocular clonus or inducible clonus | Yes |

• Criteria for Diagnosis of NMS

-Exposure to dopamine antagonist, or dopamine agonist withdrawal, within past 72 hours
 -Hyperthermia
 -Rigidity
 -Mental status alteration
 -CPK elevation
 -Sympathetic nervous system lability, defined as at least 2 of the following: Blood pressure elevation or fluctuation; Diaphoresis; Urinary incontinence

-Hypermetabolism, defined as heart rate increase and respiratory rate increase

-Negative work-up for infectious, toxic, metabolic, and neurological causes

Discussion: This case highlights the diagnostic complexity of overlapping SS and NMS. Management requires prompt withdrawal of serotonergic and antipsychotic agents, supportive care, aggressive hydration, and cardiac monitoring, with attention to QT prolongation and torsades de pointes risk.

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