

INTRODUCTION:

Serotonin syndrome is a potentially lethal medication-induced condition that is associated with the use of medications that increase serotonergic activity; most often antidepressant medications. Although the clinical presentation can vary; key features can include spontaneous clonus, inducible clonus, ocular clonus, shivering, rigidity, dysautonomia (hyperthermia), flushing, anxiety, and hyper rigidity/hypertonia ^{1,6}.

The use of serotonin reuptake inhibitors and serotonin – norepinephrine reuptake inhibitors have dramatically increased in the last decade. As a result the importance of recognizing the potential signs of serotonin toxicity, as well as other proserotonergic medications that can cause serotonin syndrome, are essential¹. Even more crucial, is the ability to recognize the features of serotonin syndrome in a timely fashion in an emergency setting as it can quickly become a life-threatening condition. With the increasing potency of serotonergic medications, as well as the unique half lives of each medication, the initial presentation of serotonin toxicity can vary widely. Some patients may present more immediately in distress, while others may not show signs until potentially hours later ^{3,4}. The classic triad for serotonin syndrome is mental status changes, autonomic hyperactivity, and neuromuscular abnormalities ^{1,5}. However, it is important to remember that this encompasses a spectrum of clinical findings, and the more clinically significant features may not be recognized until the syndrome has already placed a patient in a life-threatening situation⁶. The case presented here is used to highlight the importance of these features, and how to clinically approach possible serotonin overdoses.

Neuromuscular Effects	Autonomic Effects	Mental Status Changes
Hyperreflexia	Hyperthermia: mild,	Agitation
Clonus	<38.5°C; severe,	Hypomania
Ocular clonus	>38.5°C	Anxiety
Myoclonus	Tachycardia	Confusion
Shivering	Diaphoresis	
Tremor	Flushing	
Hypertonia/rigidity	Mydriasis	

Figure 1: Most common features of Serotonin toxicity ³

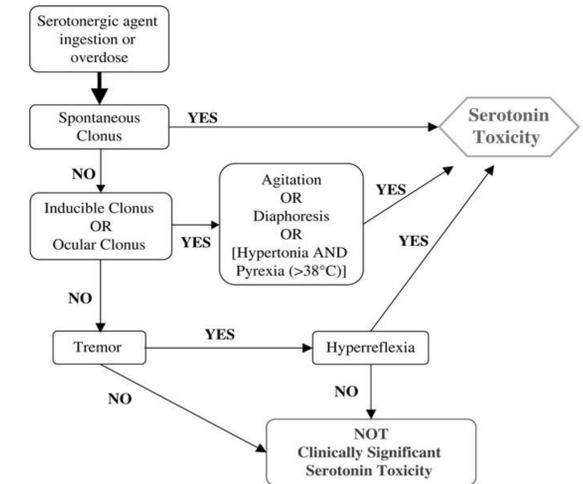


Figure 2: Hunter's Criteria for decision making; Sensitivity: 84%; Specificity: 97% ³

CASE PRESENTATION:

Patient is a 16-year-old male with a past psychiatric history of oppositional defiant disorder and reactive attachment disorder; who was transferred to the hospital for a higher level of care, following a suicide attempt via overdose. Prior to arriving to hospital; patient was intubated and there were reports of signs concerning for possible serotonin syndrome. Per primary team - they were informed by mother that patient had overdosed on his week's supply of Abilify, Lamictal, Singular, and Zoloft. He reportedly began to feel "bad" and was taken to the ED emergently for an evaluation. There he was initially alert and responsive, but quickly became unresponsive with "blown pupils". A code was called, and patient was intubated. He was treated and ABG showed 7.34/56/260/31.9/3.1 on vent setting of 12 rate, 5+ PEEP, FiO2 50% and 400 TV. Initial physical exam, following transfer to the PICU, noted patient having a GCS 9 with sustained clonus in BLW, and patellar reflexes +4 bilaterally.

Psychiatric service was consulted during the next following extubation with improvement in mentation by patient. Mother was at bedside at the time of interview. Patient, on physical exam, was still showing signs of BLE induced myoclonus with patellar reflexes +4 bilaterally. Cognitively he was much improved and was able to answer questions. It became clear that this overdose was an impulsive attempt following a disagreement with Mother. During this time, it also became clear that patient had taken less medication than originally believed; mother reports possibly only 3-4 days of pills were left in the tray of that week's medications. Patient was further medically stabilized and evaluated by service. Proper discharge plan was made and agreed upon by patient's family, primary service, and psychiatric service. Patients' impulsiveness and emotional dysregulation appeared consistent with his previous diagnosis of reactive attachment disorder, especially in the setting of him being adopted by current family and a reported history of possible abuse and neglect prior to adoption.

Differential Diagnosis:

1. Reactive attachment disorder
2. Major depressive disorder
3. Oppositional defiant disorder

DISCUSSION:

The patient initially presented as a possible suicide attempt on a reported "handful" of his medication. He presented alert, oriented, and reported that he did feel bad. At his local ER, prior to transfer, they initially believed he was stable and sought psychiatric consultation while monitoring him. However, patient quickly decompensated after being in the outside emergency department for approximately 4 hours, this resulted in intubation and a transfer to another facility for a higher level of care. Upon closer review of outside records, the initial examination showed subtle signs indicative of early toxicity that may have benefited from a more aggressive treatment approach. Patient displayed a fine tremor and agitation, while tachycardic and mildly febrile. The neurological exam did not reflect a full evaluation for possible clonus, or hyperreflexia; which, when evaluated following his transfer, were both present.

Conclusion:

This case helps demonstrate the importance of recognizing the wide spectrum of symptoms seen with serotonin toxicity. Because of the subtleties of the initial presentation, we believe that a more uniform and ordered approach should be adopted in the initial evaluation of all patients, to help determine if a patient is stable or in the early stages of toxicity. There are a few different approaches that have been developed; one of which being Hunter's criteria that has shown to have the highest sensitivity and specificity, that emergency rooms may benefit from implementing more often³.

References:

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