

Get serotonin syndrome down cold with SHIVERS

Critical initial treatment of serotonin syndrome (SS) depends on its swift and accurate identification. But the diagnosis can be complicated by nonspecific laboratory markers and physical symptoms similar to other hyperthermic disorders, such as neuroleptic malignant syndrome and anticholinergic toxicity.

You can recall SS's hallmark physical symptoms with the acronym SHIVERS (*Box*).

Differentiating SS from other hyperthermic states requires a thorough review of the patient's medical and drug history, clinical findings, and laboratory results. If diagnosed shortly after symptom onset and before muscular hypertonicity and hyperthermia develop, most uncomplicated SS cases resolve uneventfully over 24 hours. The key is to discontinue the causative agents, monitor vital signs, and administer IV fluids.¹

Cyproheptadine, 4 mg every 4 hours as needed, is the recommended therapy, but further investigation is needed to confirm its effectiveness in alleviating SS or preventing a more-severe, potentially fatal course.² Try benzodiazepines such as lorazepam (1 to 2 mg slow IV push) to moderate temperature, control agitation, and blunt the syndrome's hyperadrenergic component. Intensive care is warranted in severe cases involving hypertonicity, rhabdomyolysis, and hyperthermia (temperature >41°C).

References

1. Boyer EW, Shannon M. The serotonin syndrome. *N Engl J Med* 2005;353(11):1112-20.
2. Sternbach H. Serotonin syndrome: How to avoid, identify and treat dangerous drug interactions. *Current Psychiatry* 2003;2(5):15-24.

Box

Use SHIVERS to recall serotonin syndrome features

Shivering, one of the neuromuscular symptoms unique to SS, helps distinguish it from other hyperthermic syndromes

Hyperreflexia and myoclonus are frequently seen in mild to moderate cases and are especially notable in the lower extremities; muscular rigidity occurs only in more severe cases

Increased temperature, although variable in SS and usually observed in severe cases, is likely caused by muscular hypertonicity

Vital sign instability can present as tachycardia, tachypnea, and/or labile blood pressure

Encephalopathy—characterized by mental status changes such as agitation, delirium, confusion, and to a lesser extent obtundation—can develop from hyperthermia

Restlessness and incoordination are common because of excess serotonin activity

Sweating (diaphoresis) is an autonomic response to excessive serotonin stimulation; by comparison, anticholinergic toxicity usually manifests with hot, dry skin

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