

Guidelines for the management of serotonin syndrome

BACKGROUND

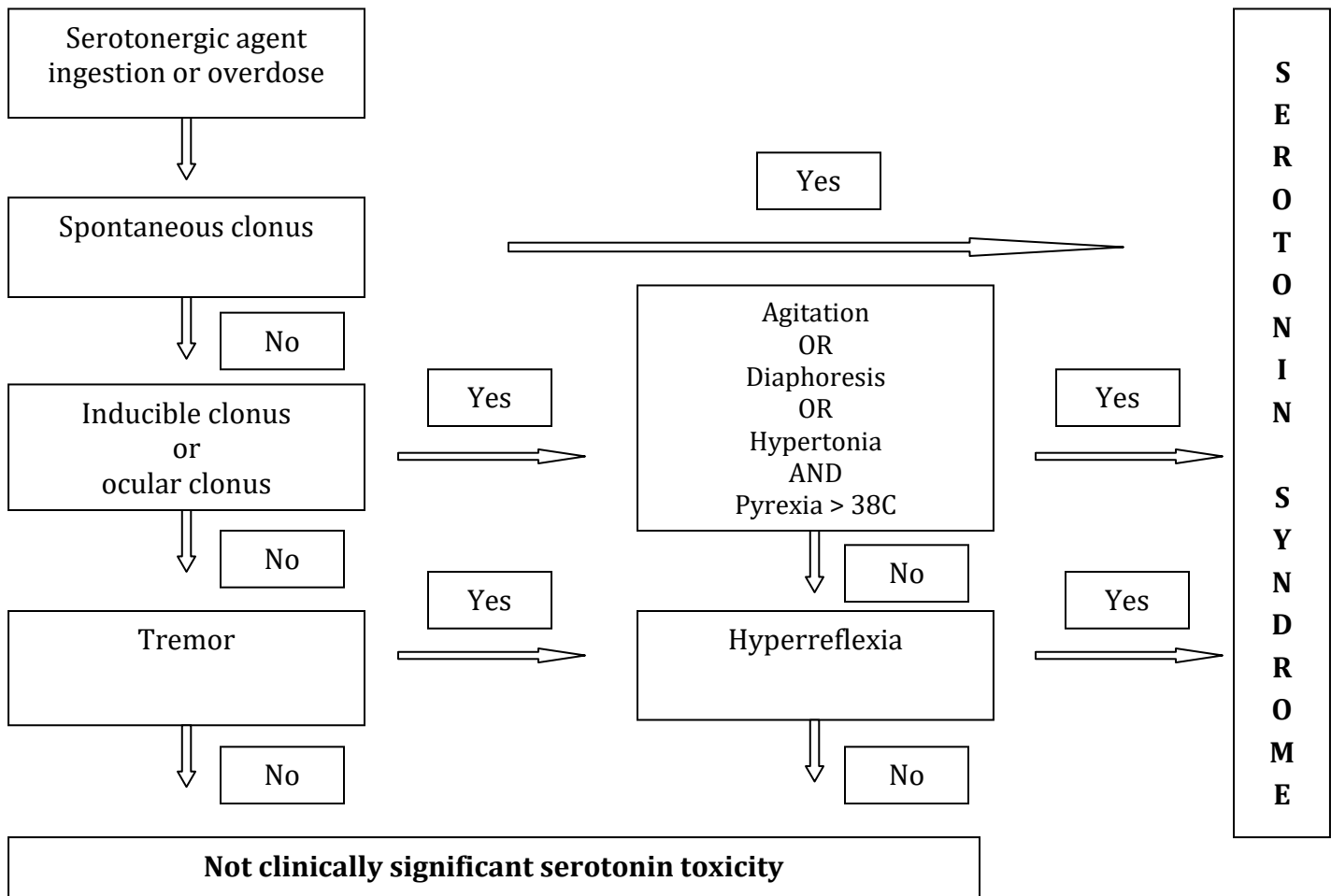
Serotonin syndrome is a potentially life-threatening condition associated with increased serotonergic activity in the central nervous system (CNS). It is seen with therapeutic medication use, inadvertent interactions between drugs, and intentional self-poisoning. Although classically described as the triad of mental status changes, autonomic hyperactivity, and neuromuscular abnormalities, serotonin syndrome is actually a spectrum of clinical findings ranging from benign to lethal.

PRECIPIANTS

A large number of medications either alone in high dose or in combination can produce serotonin syndrome.

Antidepressants	MAOIs, TCAs, SSRIs, SNRIs, trazodone and mirtazapine.
Opiates	Pethidine, fentanyl, buprenorphine, oxycodone, tramadol.
CNS stimulants	MDMA, phentermine, amphetamines, sibutramine, methamphetamine, cocaine
Herbs	St John's Wort, ginseng, nutmeg
Others	Valproate, buspirone, lithium, linezolid, chlorpheniramine, risperidone, olanzapine, ondansetron, granisetron, metoclopramide.

DIAGNOSIS (HUNTER CRITERIA)



CLINICAL FEATURES & TREATMENT

Mild toxicity	Moderate toxicity	Severe toxicity
Anxiety	Temperature 38 – 39.9 C	Temperature > 40 C
Restlessness	Tachycardia	Tachycardia
Palpitations	Diaphoresis	Diaphoresis
	Clonus	Hypertension
	Hyperreflexia	Hyperreflexia
	Agitated	Hypertonicity
	Hallucinations	Mental obtundation

Treatment

Oral benzodiazepine	Begin cooling measures	Aggressive cooling
	IV fluids – 1 to 2 litres	IV fluids – 1 to 2 litres
	IV benzodiazepine (repeat if req)	IV benzodiazepine (repeat if req)
	Cyproheptadine/chlorpromazine	Consider RSI and paralysis
		Cyproheptadine
		Consider dantrolene

RSI AND SEROTONIN SYNDROME

The following points should be considered:

- Avoid opiates with intrinsic serotonergic activity
- Avoid suxamethonium due to hyperkalaemia
- Rocuronium and atracurium are suitable muscle relaxants

SUPPORTIVE CARE

Supportive care may be required for:

- Pyrexia – cooled IV fluids, Bair Hugger set to ambient, ice packs etc. Paracetamol has no role as the pyrexia is not hypothalamic in origin.
- Hypoglycaemia
- Hyperkalaemia
- Rhabdomyolysis – consider 1.26% bicarbonate therapy

DRUG TREATMENT IN SEROTONIN SYNDROME

Cyproheptadine – 12mg PO/NG stat then 8mg every 6 hours. This is kept in the emergency pharmacy room in the ACCU corridor

Chlorpromazine – 25mg IM

Diazepam – 10mg IV. Can be repeated. Large doses may be required.

Dantrolene – 1-2.5mg/kg. Can be repeated up to a maximum of 10mg/kg.

Authors - Dr Iain Lang, Dr Chris Lochrin

Publish date – December 2015. Revised -March 2019. Review date 01/04/2022