Serotonin Syndrome

Mental Status Changes
confusion
agitation
lethargy
coma

Autonomic Instability
hyperthermia
tachycardia
mydriasis

diaphoresis
nausea &
vomiting
diarrhea

Neuromuscular Hyperactivity
hyperkinesia
hyperreflexia
trismus
myoclonus
cogwheel rigidity

Causes
SSRI
Lithium
Meperidine
Triptans
MAOI
Cocaine
SSRI + MAOI → ↑ Risk

Similar to Anticholinergic OD. However, this has Diaphoresis, Nausea and Vomiting. I'm dry as a bone and she's hot and wet!

My medication was increased 6 hours ago!

bruxism
(grinding teeth)

hyperreflexia

sweat
cog wheel rigidity
tachycardia

5HT 1a
5HT 2a
Agonism

Rx Treatment
Cyproheptadine
### Pathophysiology:

- Excessive stimulation of serotonin receptors via a variety of mechanisms.
  
  - Direct stimulation of receptors (triptans).
  - Increased synaptic serotonin release (amphetamines, cocaine, dextromorphan).
  - Increased abundance of serotonin precursors (L-tryptophan).
  - Decreased serotonin reuptake (SSRIs, TCAs, tramadol).
  - Serotonin receptors are widespread in the CNS and PNS and serotonin helps regulate attention, mood, appetite, autonomic activity and motor tone.
  - In the PNS enterochromaffin cells secrete serotonin to increase GI motility.
  - Systemic serotonin is stored in platelets where it promotes platelet aggregation & vasoconstriction. Other systemic effects include bronchial & uterine contraction.

### Treatment

- ABC and supportive management.
- Benzodiazepines for agitation and muscular relaxation.
- Cyproheptadine (serotonin receptor antagonist & histamine receptor antagonist).
  - Consider in severe cases: give 12mg orally followed by 4-8mg every 6 hours.
- Intravenous fluids for rhabdomyolysis.

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<table>
<thead>
<tr>
<th>Mental Status</th>
<th>Vital Signs</th>
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<tbody>
<tr>
<td>- Confusion</td>
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<tr>
<td>- Agitation</td>
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<tr>
<td>- Coma</td>
<td>- Hypertension</td>
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<td></td>
<td>- Tachypnoea</td>
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<tr>
<th>Other Manifestations</th>
<th>Toxic agents (typically &gt; 2 agents)</th>
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<tbody>
<tr>
<td>- Diaphoresis, flushing</td>
<td>- SSRIs</td>
</tr>
<tr>
<td>- Mydriasis</td>
<td>- MAOIs</td>
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<tr>
<td>- Tremor</td>
<td>- TCAs</td>
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<tr>
<td>- Myoclonus &amp; clonus</td>
<td>- Triptans</td>
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<tr>
<td>- Hyperreflexia</td>
<td>- Tramadol</td>
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<tr>
<td>- Rigidity</td>
<td>- Amphetamines &amp;MDMA</td>
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<tr>
<td>- Trismus</td>
<td>- Cocaine</td>
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<td>- Diarrhoea &amp; vomiting</td>
<td>- L-tryptophan</td>
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<tr>
<td>- Increased bowel sounds</td>
<td>- Linezolid</td>
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<tr>
<td>- Rhabdomyolysis</td>
<td>- Dextromorphan</td>
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- Toxic agents (typically > 2 agents)