Ability of Senior Medical Students to Identify Common Serotonergic Agents When Treating Serotonin Syndrome

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Background

- Serotonergic agents have become ubiquitous throughout medical care and include drugs such as:
  - Selective serotonin reuptake inhibitors (SSRI)
  - Select opioids (tramadol, fentanyl, and meperidine)
  - Antimicrobials (linezolid)
  - Over-the-counter preparations (dextromethorphan)
  - Lithium
  - Drugs of abuse (MDMA, LSD, cocaine, mushrooms)

Objective

The objective of this study is to determine if senior medical students are cognizant of drugs that have high serotonergic activity and could potentiate serotonin syndrome.

Methods

A clinical vignette (see above) regarding an adolescent male who presented with fulminant Serotonin Syndrome after abusing dextromethorphan was distributed to a fourth year medical school class at one institution. Students were given a list of drugs used commonly in the ICU setting and asked to identify which were known to increase serotonergic activity and thus be avoided.

Result

- 120 participants replied out of a class of 155 (77.4% response rate).
- The following agents were correctly identified for their potential to increase serotonergic activity:
  - sertraline, 87.5%
  - meperidine, 50.8%
  - linezolid, 35.8%
  - fentanyl, 18.3%
  - lithium, 16.7%
- The following agents were incorrectly identified as worsening serotonin syndrome:
  - quetiapine, 45%
  - dexmedetomidine, 12.5%
  - propofol, 5%
  - midazolam, 3.3%
  - cefepime, 0%

Discussion

- Our results demonstrate significant gaps in understanding of serotonergic agents. While 87.5% were able to identify that sertraline would worsen the syndrome, only 50% identified meperidine as serotonergic despite the historical implications of this interaction.
- Senior medical students require increased education of the pharmacology of commonly used serotonin drugs in the ICU setting to avoid worsening a Serotonin Syndrome or causing an iatrogenic adverse drug reaction.