Foundations Frameworks

Approach to Toxidromes

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Acute intoxication is often a mixed picture: patients won't necessarily exhibit all the signs of a classic toxidrome, and coingestants may create mixed toxidromes. Getting a history of what the patient was exposed to is critical, but this may not be possible if the patient is altered.

Step 1: Is the patient febrile/hyperthermic?

- *Hot Tox*: only a few toxidromes produce hyperthermia, so an elevated temp narrows the differential. Nearly all of these will require benzodiazepines for management.
    - Muscle rigidity? *Neuroleptic malignant syndrome*- give benzos (and consider bromocriptine)
        - Causes: antipsychotics (e.g. haloperidol, quetiapine, etc.)
    - Hypertonicity/clonus? *Serotonin syndrome*- give benzos (and consider cyproheptadine)
        - Many causes: SSRIs, SNRIs, MAOIs, TCAs, stimulants (including cocaine), many opioids (including fentanyl and tramadol), among others
    - Dry? *Anticholinergic*- give benzos (and consider physostigmine)
        - Causes: many, including antihistamines (e.g. diphenhydramine), TCAs, and various plants (e.g. nightshade, jimsonweed)
    - Sweaty? *Sympathomimetic*, give benzos
        - Causes: stimulants (cocaine, amphetamines, etc.), MAOIs
    - Just got a volatile anesthetic or succinylcholine? *Malignant hyperthermia*- give dantrolene

Note that NMS and serotonin syndrome can look identical except for the above motor findings, although timing of onset, labs, and med lists can help; anticholinergic and sympathomimetic syndromes may also look identical except for the presence or absence of sweating.

Step 2: Is the patient agitated or sedated?

- Sedation is more common
    - Miosis? *Opioid toxidrome*, give naloxone for respiratory depression (and you may need to give a lot if the patient took methadone, fentanyl, or other synthetic opioids)
    - No miosis? Most likely EtOH or benzos; consider flumazenil in the latter (but avoid in EtOH- or benzo-dependent patients, who might seize)
    - Fluids coming from everywhere? *Cholinergic toxidrome* (mnemonic DUMBBELLS), decontaminate and give atropine/2PAM
        - Causes: pesticides, nerve gas
- Agitation is often concurrent with hot tox, but exists with other toxidromes as well
    - Superhuman strength? PCP, chemically restrain and ensure patient/staff safety
    - Withdrawal syndromes (EtOH, benzos, opioids)

Always remember to work up and treat concurrent problems, such as trauma or pre- or co-existing medical conditions that complicate the picture. Above all, remember to manage the ABCs.

References:

Kulig, Ken. *Rosen's Emergency Medicine*, 8e. Chapter 147: General Approach to the Poisoned Patient. Saunders 2014, pp. 1954-1959