Toxic Plants and Mushrooms: What You Don’t Know CAN Kill You

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Our Mission:
- Principles of “natural” toxicology
- Recognize patterns of and treat common plant intoxications
- Distinguish toxic and benign mushroom ingestions

That Wacky Kid
- 15 year old brought in by parents
- Ate plant on hillside in San Diego
- Disoriented, scared
- Physical exam
  - HR 130; BP 160/100; T 100.5
  - Big pupils
  - Flushed, dry skin
  - Hallucinating

The Keen Ear and Eye
- History
  - Time of ingestion
  - Interval between ingestion & symptom onset
  - Type/amount/parts of plant ingested
  - Skin contact
- Organ System:
  - Neurologic: (Toxidromes)
    - Anti-cholinergic
    - Cholinergic
    - Sympathomimetic/hallucinogenic
  - Cardiac (glycosides)
  - GI irritants
  - Skin reactions
The Culprit

Jimson Weed

- Alkaloid
  - 10% of all plants
  - All parts of plant toxic
  - Primary neurologic sx
  - Others: belladonna

- Symptoms:
  - Hot as a hare
  - Blind as a bat
  - Dry as a bone
  - Red as a beet
  - Mad as a hatter

Treatment

- ABC, IV, Monitor
- Charcoal +/-
- Symptomatic care: use BDZ for agitation not phenothiazines prn
- Foley as needed
- Physostigmine?
  - maybe if severe symptoms
  - contact poison control

A Socratic Death

- 22 year old female with history of depression found by friend on the floor
- Brought in by paramedics
- Minimal respirations, flaccid paralysis, no palpable pulse
- Several cuttings of a plant were found in her room and brought in
The Culprit

Poison Hemlock

Nicotinic alkaloid
• All parts poisonous, roots most toxic (tobacco, betel nut)
• Symptoms:
  • DUMBELS
  • Muscle contractions, seizures, paralysis
  • Death by respiratory failure

Symptoms:

Cholinergic

Treatment

Plant Inspiration

• 30 year old male BIB friends from “Native Ritual”
• Agitated, speaking to the walls
• Physical Exam:
  • HR 120
  • Big pupils
  • Flushed and sweaty

ABC, IV, monitor
• Charcoal +/-
• Seizures: benzodiazepines
• Symptomatic bradycardia: atropine
• Hypotension: IVF
• Paralysis: intubation
The Culprit

Peyote

- Primary psychoactive component: *mescaline*
- *e.g.* khat, mescal bean

Symptoms:
- Norepinephrine/epinephrine-like
- BP, HR, RR, T up
- Mydriasis
- Hot moist skin
- Agitation/hallucinations

Treatment

TIME + ATIVAN
COOLING

Creative Chef

- 3 patients brought in after eating a freshly picked garden salad
- All remember bell-shaped flowers in salad
- All complaining of dizziness
- Physical Exam:
  - 2 with HR 40
  - 1 with HR 220

Creative Chef
The Culprit

Cardiac Glycosides

- Clinical effects
  - General:
    - N/V, disorientation, dizzy
  - Cardiac:
    - Atrial or ventricular tachyarrhythmias
    - AV nodal blockade→ bradycardia
  - Other cardiac glycosides
    - Oleander (seeds most toxic)

Foxglove

- Active component: digitalis
- Cardiac glycoside
- Mechanism:
  - Inhibit Na-K ATPase→
  - Increase Na-Ca exchange to pump Na out→ increase intracellular Ca
  - Increase atrial/ventricular automaticity and inhibit AV node

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Treatment

- ABC, IV, monitor x 24 hrs, EKG
- Charcoal +/-
- Pacing
- Check: K, Mg; avoid calcium
- Significant arrhythmias:
  - Lidocaine
  - Phenytoin
  - Digibind*
My Tummy Hurts

- 2 year old finds some pretty seeds and starts chewing on them
- 2 hours later she is vomiting, having diarrhea and c/o abd pain
- What could be the culprit?

Castor Bean Plant: Ricin

- Nut/seed toxic
- Lethal: 1 seed child/8-10 adult
- Latency: 1-6 hours
- Sx: N/V/D, hemorrhage then..
- Dehydration, multi organ failure--->death (3-5 days)
- Tx: IVF, charcoal +/-, observe 4-6 hrs for sx, supportive care

Scratch that Itch

- 33 yr old male on vacation from New Hampshire for 3 days so far
- Walked through GG park on Day 1
- Itchy weeping rash on trunk, face, groin
- What’s the culprit?
- What can you do?
Which is it?

Oak/Ivy/Sumac: The Facts

- 50% allergic
- Resin mediated: urushiol
- 1-4 hour window to wash off
- Onset: 24-48 hrs
- Linear weeping vesicles
- Lasts 10-12 days

The Myths

- Scratching will spread the rash
- The rash is contagious
- Once allergic, always allergic
- Dead plants aren’t toxic
- Need leaves to get rash

Treatment

- Dessicants
  - Calamine
  - Domeboro salts
- Anti-pruritics
- Wash all clothing (resin)
- If severe, face or genital, 10-14 d steroids w/ taper
Prevention

- Pre Exposure:
  - *Ivy Block*

- Post Exposure:
  - Isopropyl alcohol
  - *Tecnu*
  - *Zanfel*

How about those mushrooms?

- There are OLD mushroom hunters
- There are BOLD mushroom hunters
- But there are no OLD BOLD mushroom hunters

Honey, I poisoned the guests..

- 6 people report to local ED 1 hour after attending a dinner party. They all report severe nausea, vomiting and diarrhea
- The hostess boasted about the wild mushrooms she collected for her delectable soup
- What might she have served?

GI Irritant Mushrooms

- Chlorophyllum molybdites
- *Jack-o’lantern*
- *Amanita brunnescens*
Common Features of Benign GI Irritants

- Onset of N/V early
- Typical onset within 1-2 hours
- Symptoms resolve within 6-12 hours
- Supportive care only

Honey, I really poisoned the guests...

- 6 members of a Vietnamese family BIBA with severe N/V/D x 1 hour
- 10 hours ago consumed a stir-fry containing foraged mushrooms
- Within 48 hours, they are all suffering from hepatic failure
- What’s the culprit here?

Amanita species

- A. Virosa
- A. phalloides
- A. verna

Common Features of Hepatotoxic Mushrooms

- Onset of nausea/vomiting/diarrhea typically delayed
- Onset 4-16 hours after ingestion (not 1-2 hours)
- Symptom free period 24-48 hours
- Hepatotoxicity manifests 48-72 hours post ingestion
Honey, the guests don’t look so good

- 6 guests from “Amateur Mycologist Assoc” (AMA) present 30 minutes after a fine meal
- A wild mushroom casserole was served
- Complaints: N/V/D, salivation, tearing, moist cough
- PE: slow HR and small pupils
- Who dunnit?

Amanita muscaria

Cholinergic Toxicity

- Mechanism: muscarinic receptor activation
- Symptoms: DUMBELS
- Quick onset 15-30 min (typical for the not too toxic mushrooms)
- Quick offset 6-24 hours
- Treatment: symptomatic relief

Approaching the Mushroom Victim

- Symptom onset: early vs late
- GI irritant? Cholinergic?
- Mushroom brought in to Poison Control
- ABC, IV, monitor
- Charcoal if recent ingestion
- Observation
- Hepatic failure supportive care liver transplant
Pearls of Plant/Mushroom Toxicology

- Determine time between ingestion & symptom onset
- Neurological sx/toxidromes? Cardiac toxicity? GI irritant?
- Treatments are general, rarely specific