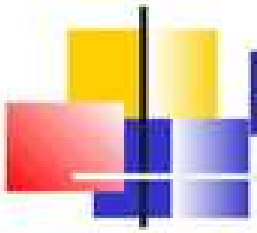
Poisoning & Its Management

BY:
Md. Monirul Islam
Pharmacy Discipline
Khulna University
Khulna.



Poison

- A poison is any substance that is harmful to the body
- Many poisonous substances are products people have around the house. Even medicines that aren't taken as directed can be harmful.

Poisoning

- Poisoning is a common medical emergency in any country
- Poisoning occurs when any substance interferes with normal body functions after it is swallowed, inhaled, injected, or absorbed.

Types of Poisoning

1. Deliberate
2. Accidental
3. Environmental
4. Industrial exposures.

Poisoning Causes

Substances that may act as poisons include the following:

- Cleaning products
- Household products, such as nail polish remover and other personal care products
- Pesticides
- Metals, such as lead ,Mercury, which can be found in old thermometers and batteries
- Prescription and over-the-counter drugs when combined or taken the wrong way
- Contaminated food
- Plants, such as poison ivy and poison oak
- Venom from certain snake

Symptoms of Poisoning

- Vomiting
- Diarrhea
- Nausea
- Redness or sores around the mouth
- Drooling or dry mouth
- Dilated pupils or constricted pupils
- Rash
- Confusion
- Shaking or seizures
- Trouble breathing

- Unconsciousness (fainting)

Management of Poisoning

The holistic management of toxic exposures should include the following considerations based on a risk assessment approach:

- Resuscitation and stabilization
- Toxic diagnosis
- Therapeutic interventions
  - Decontamination
  - Enhanced elimination of absorbed toxins
  - Antidotes
- IV. Supportive care

Resuscitation & Stabilization

- First priorities are ABC's (Airways, Breathing & Circulation)
- Vital sign including pulse and hypoglycemia must be corrected
- Unresponsive patients treated empirically with coma cocktail
  - Oxygen, naloxone, dextrose 50W (D50W), and 100mg thiamine
  - 50 ml of D50W for adults and 1g/kg glucose for children (4ml/kg D25W of 10ml/kg of D10W)
  - Thiamine not usually given to children

Toxicological Diagnosis

History

- Need to obtain as much information as possible about exposure i.e. number of exposed persons, type of exposure, amount or dose, route
- Patients intent must be determined

Examination

- Undress patient completely for thorough examination
- Check clothing for objects or substances
- Assess general appearance of patient
- Examine skin for bruising, cyanosis, flushing
- Assess ABCDE (Airways, Breathing, Circulation, Disability, Exposure)

Toxicological Diagnosis

- Toxicological Investigation

- In the acute care setting toxicological screen is very limited and does not contribute significantly
- Toxicological screens may play a role in evaluation of children

Gastric Emptying

- Emesis: achieved by using syrup of ipecac
  - Dosing: 15 ml for 1-12 yo and 30 ml for adults; may repeat once if no emesis in 12 hr
- 90% vomit within 20 minutes of first dose and 97% vomit with second dose
- Usually 3-5 episodes of emesis and resolve in two hours; if protracted emesis occurs consider toxin as etiology

Gastric Emptying

- Orogastric lavage: 36-40 French tube used in adults and 22-24 French tube in children.
  - Measure from chin to xiphoid and confirm with air insufflation
- Lavage with room temperature water until it runs clear
- Charcoal should be used before withdrawal of tube

Toxin Adsorption in Gut

- Activated Charcoal
- Multiple-Dose Activated Charcoal
- Cathartics
- Whole-Bowel Irrigation

Activated Charcoal

- Most appropriate agent to decontaminate GI tract
- Adsorbs toxin in gut lumen
- Safety proven in adults and children
- Dose 1g/kg
- Indications: any drug known to absorb it or after unknown ingestions by patient's with protected airways

Multi-Dose Charcoal

- One dose usually sufficient
- Indications for multi-dose activated charcoal:

  ingestion of large doses, substances that form bezoars, slow release toxins, toxins that slow gut function, toxins with enterohepatic or enteroenteric circulation
- Repeat dose is 0.25-0.5 g/kg

Cathartics

- Osmotic cathartic usually given with activated charcoal
- 70% sorbitol (1 g/kg) or 10% magnesium citrate
- Shown to decrease transit time of activated charcoal
- No definitive clinical human data suggest that a cathartic limits toxins bioavailability or changes patient's outcome

Enhanced Elimination

- Alkalinization
- Forced diuresis
- Hemodialysis/Hemoperfusion

Alkalinization

- Beneficial in certain ingestions: 2-4-D (herbicide), phenobarbital, chlorpropamide, salicylates, methanol
- Alkalinization achieved by IV dose of bicarbonate at 1-2 mEq/kg, followed by intermittent boluses or continuous bicarbonate drip for urine pH 7.5-8.0
- Profound hypokalemia may result, must aggressively replace

Hemodialysis/Hemoperfusion

- Dialysis reserved for specific toxins: salicylates, methanol, ethylene glycol, lithium, theophylline, amanita (mushrooms)
- Benefits: removal of toxins already absorbed by gut, ability to remove parent compound and active metabolite,
- Less effective when toxin has large volume of distribution (>1 L/kg), has large molecular weight, or highly protein bound

Hemoperfusion

- Used for decontamination of patient's systemic circulation
- Involves placing a filter filled with activated charcoal into dialysis circuit
- Alleviates constraints of protein binding and molecular size
- Toxins must be well absorbed by charcoal and have small volume of distribution

Poison Prevention

- Only take prescription medications that are prescribed by a healthcare professional.
- Never take larger or more frequent doses of your medications, particularly prescription pain medications, to try to get faster or more powerful effects.
- Never share or sell your prescription drugs.
- Follow directions on the label when you give or take medicines.

Poison Prevention

- Turn on a light when you give or take medicines at night so that you know you have the correct amount of the right medicine.
- Keep medicines in their original bottles or containers.
- Monitor the use of medicines prescribed for children and teenagers, such as medicines for attention deficit hyperactivity disorder, or ADHD.

Thanks to All