MEDAVIE HealthEd ÉduSanté

PHARMACOLOGY

Advanced Care Paramedicine

Module: 09

Section: 06

Naloxone (Narcan)

- Class: Narcotic antagonist

- Actions:
  - Proven effective in the reversal of overdoses caused by:
    - Narcotics
    - Synthetic narcotic agents
  - Chemically similar to the narcotics
  - Only has antagonistic properties
  - Competes for opiate receptors in the brain
  - Displaces narcotic molecules from opiate receptors
  - Reverses respiratory depression associated with narcotic overdose

- Indications:
  - Complete or partial reversal of depression caused by narcotics

Naloxone (Narcan)

- CI:
  - Hypersensitivity
- Precautions:
  - Administered cautiously to patients who are known or suspected to be physically dependent on narcotics
  - Abrupt and complete reversal by naloxone can cause withdrawal-type effects
  - Includes newborn infants of mothers with known or suspected narcotic dependence
  - May cause narcotic withdrawal in the narcotic-dependent patient
  - Only enough of the drug to reverse respiratory depression should be administered

Naloxone (Narcan)

- Side Effects:
  - Hypotension
  - Hypertension
  - Ventricular dysrhythmias
  - Nausea and vomiting

Naloxone (Narcan)

- Dosage:
  - Adult:
    - 0.4 mg to 2.0 mg IV, IM, SC (0.8 mg ET)
    - 2.0 mg 500 mL of D_5W
      - Concentration of 4 µg/mL
      - Infuse at 100 mL/hr
  - Pediatric:
    - < 5 y/o or < 20 kg: 0.1 mg/kg IV, IO, IM, ET
    - > 5 y/o or > 20 kg: 2.0 mg IV, IO, IM, ET

Dimenhydrinate (Gravol, Dramamine)

- Class: Antiemetic, Antihistamine
- Actions:
  - Belongs to the antihistamine class of drugs
    - Not commonly used for this action
  - Its site and action are not precisely known
  - Is often used with analgesics, particularly narcotics
- Indications:
  - Used for the prevention or relief of:
    - Nausea and vomiting
    - Motion sickness
    - Drug-induced nausea and vomiting (particularly narcotics)

Dimenhydrinate (Gravol, Dramamine)

- CI:
  - ALOC
  - Glaucoma
  - COPD
  - Prostatic hypertrophy

- Precautions:
  - Should be used with caution in patients with seizure disorders and asthma

- Side Effects:
  - Drowsiness
  - Dizziness
  - Blurred vision
  - Dry mouth
  - Dry nose
  - Dry bronchi
  - Tinnitus

Dimenhydrinate (Gravol, Dramamine)

- Dosage:
  - Adult:
    - Nausea and vomiting
      - 10 - 20 mg (diluted) slow IV; 25 – 50 mg IM

Metoclopramide (Reglan)

- Class: Antiemetic
- Actions:
  - Medication used in the treatment of gastroesophageal reflux and nausea and vomiting
  - Stimulates motility of the upper gastrointestinal tract and promotes emptying of the stomach
  - Increases tone of the valve between the esophagus and the stomach (lower esophageal sphincter), which reduces reflux of stomach contents into the distal esophagus
  - Antiemetic effects appear to result from its blockade of central and peripheral dopamine receptors
- Indications:
  - Severe nausea and vomiting
  - Gastroesophageal reflux

Metoclopramide (Reglan)

- CI:
  - Possible intestinal hemorrhage
  - Bowel obstruction
  - Bowel perforation
  - Hypersensitivity

- Precautions:
  - May impair mental and physical abilities
  - EPS can occur following administration
    - Diphenhydramine should be available

Metoclopramide (Reglan)

- Side Effects:
  - Drowsiness
  - Fatigue
  - Sedation
  - Dizziness
  - Mental depression
  - Hypertension
  - Hypotension
  - Tachycardia
  - Bradycardia
  - Diarrhea

Metoclopramide (Reglan)

- Dosage:
  - 10-20 mg IM
  - Severe intractable nausea and vomiting
    - 10 mg slow IV over 1-2 minutes
    - 10 mg diluted in 50 mL of NS and administered over 15 minutes
  - IV is preferred route in severe nausea and vomiting due to rapid onset of action

Acetylcysteine (Mucomyst)

- Indications: Management of Acetaminophen (Tylenol) overdose

- MOA:
  - Large quantities of Tylenol cause a metabolite called N-acetyl-p-benzoquinone imine (NAPQI) to accumulate within the body
  - Body does not have enough stores of protective agents to inactivate the toxic NAPQI
  - Metabolite is then free to react with hepatic enzymes damaging hepatocytes
  - May lead to severe liver damage and/or death by liver failure
  - Acetylcysteine acts to augment the reserves in the body and directly bind to toxic metabolites protecting the hepatocytes in the liver from NAPQI toxicity

- Route: IV Administration

Activated Charcoal

- Adsorbs a wide variety of drugs and chemicals
  - Adsorption is a process in which atoms and molecules move from a bulk phase (such as a solid, liquid, or gas) onto a solid or liquid surface
- Because charcoal is not "digested," it stays inside the GI tract and eliminates the toxin when the person has a bowel movement.
  - Note: Once the chemical or drug has been absorbed by the GI tract, activated charcoal can no longer retrieve the toxic ingestion. It will only attach to substances that are still inside the stomach or intestines.
- Often combined with Sorbitol (stimulates the bowels to move)

Ipecac

- Actions are mainly of its major alkaloids (emetine and cephaeline)
- Both act locally by irritating the gastric mucosa and centrally by stimulating the medullary chemoreceptor trigger zone to induce vomiting

Flumazenil (Anexate)

- Class: Imidazobenzodiazepine derivative, benzodiazepine antagonist

- MOA:
  - Competitively inhibits the activity at the benzodiazepine recognition site on the GABA/benzodiazepine receptor complex
  - Does not antagonize all of the CNS effects of drugs affecting GABA (including ethanol, barbiturates, or general anesthetics) and does not reverse the effects of opioids

Ondansetron (Zofran)

- Class: Antiemetic, Serotonin 5-HT_3 receptor antagonist

- MOA:
  - Affects both peripheral and central nerves
  - Reduces the activity of the vagus nerve, which deactivates the vomiting center in the medulla oblongata
  - Blocks serotonin receptors in the chemoreceptor trigger zone.
  - Has little effect on vomiting caused by motion sickness, and does not have any effect on dopamine receptors or muscarinic receptors.

Pantoprazole (Pantoloc)

- Class: Proton Pump Inhibitor

- MOA:
  - Binds irreversibly to H^+K^+ATPase (Proton pumps) and suppresses the secretion of acid
  - Since it binds irreversibly to the pumps, new pumps have to be made before acid production could be resumed

H_2 Antagonists

- Examples: Ranitidine (Zantac), Cimetidine (Tagamet)

- MOA:
  - Block the action of histamine on parietal cells in the stomach, decreasing the production of acid by these cells
  - Used in the treatment of dyspepsia

Octreotide (Sandostatin)

- Class: Octapeptide (Mimics Somatostatin)

- MOA:
  - Inhibit secretion of many hormones (gastrin, cholecystokinin, glucagon, growth hormone, insulin, secretin, pancreatic polypeptide, TSH, and vasoactive intestinal peptide)
  - Reduce secretion of fluids by the intestine and pancreas
  - Reduce gastrointestinal motility and inhibit contraction of the gallbladder
  - Inhibit the action of certain hormones from the anterior pituitary
  - Cause vasoconstriction in the blood vessels
  - Reduce portal vessel pressures in bleeding varices