MANAGEMENT OF COMMON POISONING
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Poison

Definition: Poison is a substance (solid, liquid, gas), which if introduced in the living body or brought in contact with body parts will produce ill health or death.
Diagnosis of Poisoning

Although poisoning can mimic other illnesses, correct Diagnosis can usually be established by:

- History
- Physical Exam
- Routine & Toxicologic laboratory Exam
- Clinical Course
Fundamentals of Poisoning Management Supportive

SUPPORTIVE
1) Airway protection
2) Oxygen & Ventilation
3) Treatment of arrhythmias
4) Hemodynamic Support
5) Treatment of Seizures
6) Correction of temp. abnormalities
7) Prevention of Secondary Complications
Prevention of further poison absorption:

Gastrointestinal decontamination by:-
1) Syrup. of Ipecac. – induced emesis
2) Gastric Lavage
3) Activated Charcoal (prepared by treating charcoal with super-heated steam, which significantly enhances its adsorbing power)
4) Whole Bowel irrigation
5) Catharsis
6) Dilution
7) Endoscopic removal
Decontamination of other sites

1) Eye
2) Skin
3) Body cavity evacuation
Enhancement of poison elimination

Multiple dose activated charcoal – “gut dialysis” - 50-100gm followed by 12.5gm hourly by nasogastric tube. Useful for Benzodiazepines, anticonvulsants, tricyclics, theophylines, phenothiazone, salicylates & antihistaminics.
Enhancement of poison elimination

Acid Diuresis given in amphetamine, quinine, phencyclidine poisoning with 750gm NH4Cl in 500ml 5% D.

Forced Alkaline Diuresis for salicylate poisoning.

During these give frusemide / mannitol to keep Urine output >200ml/h & monitor & replace K, Mg carefully.
Enhancement of poison elimination

- Chelation
- Hyperbaric O2
Common mode of action of Antidotes

• 1. Inert complex formation & excretion – chelatig agents for heavy metals, specific Ab for digoxin, dicobalt edeta for cyanide

• 2. Accelerated detoxification of a poison – thiosulfate accelerates conversion of cyanide to non-toxic thiocyanate

• 3. Reduced toxic conversion – ethanol inhibits metabolism of methanol to toxic metabolites by competing for the same enzyme (alcohol dehydrogenase)
Common mode of action of Antidotes

• 4. Receptor site competition – by displacing the poison from specific receptor sites, thereby antagonising the effect completely – naloxone antagonises the effects of opiates

• 5. Receptor site blockade – atropine blocks the effects of Anticholinesterase agents such as OPs at muscarinic receptor sites

• 6. Toxic effect bypass – 100% O2 in cyanide poisoning
Specific antidotes

- Paracetamol – N-acetylcystine, cont. iv infusion (150mg/kg over 15min, 50mg/kg in 500ml 5%D over 4h then same 8 hrly)
- Benzodiazepine – Flumazenil – 0.2-1.0mg iv given in 0.1mg increments.
- Opioids – Naloxone- .2-.4mg iv. (+ doxapram iv)
- Cyanide – Dicobalt edta (300mg iv), severely toxic in absence of cyanide, so best avoided. (+ Na thiosulphate, 150mg/kg iv then 30-60mg/kg/h converts cyanide to thiocyanate, if pt. unconscious).
Organophosphorus poisoning

- Organochlorine compounds – DDT & Chlordane. OP & Carbamates are anticholinesterase.
- Acute - Organo Phosphorous poisoning ranks foremost in the list of agents which cause acute pesticide poisoning in the developing countries.
- Incidence: 3 million cases (WHO)
- Death: 2000
Fatal Dose

- Mildly toxic – 25-30gm. - chlorothion, malathion, etc.
- Highly toxic – parathion-15-30mg, methylparathion- 15mg, TEPP-5gm etc.
Absorption

- GI Tract
- Skin and Mucous membrane
- Inhalation
- IV or IM (Rare)
Anticholine Esterase

- Cholinesterase
  - Acetyl Choline
    - (+) Choline
    - Anticholinesterase
      - Acetic Acid
        - (-)
      - Anticholinesterase
        - Reversible (Neostigmine, Pyridostigmine, Carbamate)
        - Irreversible (Organo Phosphorus Compounds, OPCs)
          - PAM (Oximes)
Clinical Features of OP Compounds

Muscarinic symptoms-
• Abdominal Cramps
• Diarrhea
• Vomiting
• Excessive salivation
• Meiosis
• cough
• Wheezing
• Bronchorrhea

• Dyspnoea
• Lacrimation
• Sweating

PATIENT IS DROWNING IN HIS OWN SECRETION
Clinical Features of OP compounds

Nicotinic

• Twitching
• Fasciculation
• Weakness
• Paralysis
• Urinary Incontinence
• Faecal Incontinence
### Clinical Features (Contd.)

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Clinical Features (Contd.)

• Neurological
  – Headache, Drowsiness, Irritability
  – Impaired consciousness
  – Convulsion
  – Cog wheel rigidity
  – Pyramidal signs
  – Paralysis
  – Meiosis
Clinical Features (Contd.)

Intermediate syndrome: It develops 1-4 days after acute poisoning and lasts for about 3 weeks. Paralysis usually involve ocular, bulbar, neck, proximal limbs and respiratory muscles. It is unresponsive to any form of treatment (Atropine and Oximes). It usually requires ventilatory support for a prolonged period.
Diagnosis

• H/O exposure or intake – most important
• Characteristic smell – usually due to solvent, aromax, which is responsible for kerosene like smell.
• Characteristic C/F.
TREATMENT

• Speed is immediate
• The pt. should be immediately removed from the environment & clothing removed.
• Stomach wash – better given within an hour.- Activated charcoal 100gm. in 150ml. water or 5%NaHCO3
• For skin contact – wash with soap & water
• Eye wash with 3%NaHCO3 or normal saline or simple tap water for 15-20minutes
• Airway cleaned with suction
• 02 inhalation
Treatment of OP Poisoning

• Most specific antidote- Massive dose of Inj. Atropine- 1.2-2.4mg. i.v. every 10-20 minutes until signs of atropinisation occur.

• Signs of atropinisation : Dry flushed skin, pupil size at least 4mm. & heart Rate of 120/min. Don’t give atropine to cyanosed patient before adequate oxygenation.

• 50-100mg. Of Inj. Atropine may be required in 24hours.

• Duration of atropinisation: at least 24-48hrs.

• In some pts. like DALF poisoning which is lyophilic, drug Tx. May be required upto 10 days or even more.
Use of Cholinesterase Reactivator

Injection PAM (Pralidoxime Chloride)-1-2 gms. to be mixed in 10 ml. distilled water and to be injected over 10-20 minutes (not more than 500 mg over a minute). It has to be repeated every 4-6 hrs as the condition demands(12gms. In 24 hrs. may be required). It should be used quickly, if used after 24hrs. desirable effects may not be achieved.