

## POISONS BLOCK Q

BY FATIMA HAIDER

### ACETAMINOPHEN

- Initially - nausea, vomiting, right upper quadrant pain
- Later (>24 hours) - liver failure (jaundice and encephalopathy) and/or renal failure

#### Treatment

- Gastric lavage within 1 hour
- IV charcoal can be used in patients presenting within 1 hour
- Antidote of choice - IV N-acetylcysteine (acts by replenishing hepatic glutathione)
- Alternative antidote - Methionine (less effective than NAC)

### AMPHETAMINES

- Euphoria, talkativeness, restlessness, tremors
- dry mouth, nausea, vomiting, diarrhea, abdominal cramps
- Palpitations, tachycardia
- Mania and delirium with hallucinations, mainly auditory
- Severe poisoning - convulsions and coma
- Chronic poisoning - amphetamine psychosis clinically resembling acute paranoid schizophrenia

#### Treatment

- patient kept in dark room
- gastric lavage with tap water and activated charcoal
- sedation

### COCAINE

- First acts as stimulant and then depressant of CNS
- Stimulant stage - dryness of mouth, euphoria, increased physical and mental energy, restless, excitement, delirium.
- Patient may become maniacal and may have hallucinations
- Flushed face, dilated pupils, blurred vision, tachycardia, hyperthermia, increased respiratory rate
- Toxic dose - incoordination, muscle twitching, convulsions
- Stage of depression - feeble respiration and collapse, ending in death from respiratory or cardiac failure
- Complications - MI, rhabdomyolysis, renal failure, intracerebral hemorrhage

#### Treatment

- stomach wash with potassium permanganate or tannic acid
- barbiturates or diazepam to control excitement
- cardio respiratory Stimulants and artificial respiration may be required

### **Chronic cocaine poisoning**

- Black tongue and teeth
- Ulceration of nasal septum
- Anorexia, weight loss, weakness, tremors, impotence, moral deterioration, insanity
- Increased erotic tension in women and nymphomania
- Many sexual perversions in males, mainly homosexuality
- Delusions of persecution and hallucinations, chiefly tactile and visual
- Magnan's symptom - paraesthesia which feels like a constantly moving foreign body, such as fine sand or powder, under the skin.

### **BENZODIAZEPENE**

- Rapid onset weakness, ataxia, drowsiness
- Eyes - diplopia, nystagmus
- Respiratory depression - decreased respiratory rate and ventilation
- CNS depression - sedation, confusion, coma
- pupile size - normal

#### Treatment

- Activated charcoal within 1 hour of ingestion
- Maintenance of airway in those with impaired consciousness
- Flumazenil is specific benzodiazepene antagonist
- Flumazenil is however contraindicated in Mixed TCA + benzodiazepene poisoning, and those with seizures history

### **BARBITURATES**

- Giddiness, ataxia and slurred speech
- Automatism - repeatedly takes more doses because they forget the previous ones, leading to severe overdose or death
- Excitement and delirium, followed by stupor and later coma
- Advanced poisoning - cyanotic face, BP falls, temperature subnormal, Cheyne stokes breathing, absent bowel sounds
- Oliguria
- Barbiturate blisters found on sites of friction or pressure, such as interdigital clefts, axilla, and inner aspects of knees and calves

#### Treatment

- Gastric lavage with warm water containing potassium permanganate
- A concentrated solution of magnesium sulfate should be left in stomach
- Body warmth must be maintained
- Metaraminol - for circulatory depression and shock
- If coma is prolonged - Amphetamine sulphate 10 mg every half hour
- dialysis and exchange transfusion

- IV mannitol for forced osmotic diuresis

## **ORGANOPHOSPHATE**

Main toxic effects of organophosphates are muscarinic, nicotinic and on CNS

### **MUSCARINIC EFFECTS**

Mnemonic (DUMBELS)

- Diarrhea
- Urination
- Miosis
- Bronchospasm
- Emesis
- Lacrimation (red tears) - red due to porphyrin in lacrimal glands
- Salivation

### **NICOTINIC EFFECTS**

- muscle weakness
- Fasciculations
- Areflexia
- Muscle paralysis

### **EFFECTS ON CNS**

- Irritability, restlessness, apprehension
- Fine fibrillary tremors of hands, eyelids, face or tongue
- Mental confusion progressing to stupor and muscle weakness with tremors and convulsions
- Coma with absence of reflexes and depression of respiratory and circulatory centers

### **Treatment**

- Antidote - Atropine every 15 to 30 mins till signs of atropinisation occurs (flushed face, dry mouth, dilated pupils, fast pulse, warm skin)
- Cholinesterase reactivators - oxime compounds (pralidoxime)
- Diuretic and brisk saline purgative may be useful
- Atropine reverses ACh-induced bronchospasm, bradycardia and hypotension
- Pralidoxime reactivates phosphorylated acetylcholinesterase. It reverses or prevents muscle weakness, convulsions, and coma

## **CARBON MONOXIDE**

- CO causes toxicity by binding with Hb forming carboxy-hemoglobin which reduces oxygen delivery and inhibits cellular respiration
- Initially - nausea, vomiting, ataxia, nystagmus, drowsiness, hyperventilation, hyperreflexia, shivering

- Later - coma, convulsions, hypotension, respiratory depression, and cardiovascular collapse, and ECG abnormalities such as ST depression, T wave abnormalities, ventricular tachycardia, ventricular fibrillation
- Poisoning during pregnancy - fetal hypoxia, intrauterine death

#### Treatment

- Remove patient from source of exposure as soon as possible
- High flow (100%) oxygen by tightly fitting facemask
- High flow oxygen should be continued until COHb is <5% and for at least 6 hours after exposure
- Endotracheal intubation and mechanical ventilation in unconscious patients

#### **ETHANOL**

- Stage of excitement - feeling of well-being and pleasure, may behave in obscene manner or talk in vulgar language, sexual desire may be aroused
- Stage of incoordination - incoordination of thought, speech and action, pupils are dilated
- Stage of narcosis - passes into deep sleep, pulse is rapid, temperature subnormal, breathing stertorous, pupils contracted
- McEwan's sign
- Alcohol causes faulty depth perception, poor peripheral vision, distorted color vision, and reduced night vision
- Fine lateral Nystagmus
- Tongue dry, furred or excessive salivation
- Impaired coordination leading to impaired finger nose test
- Reflexes are delayed and sluggish

#### Treatment

- stomach lavage with sodium bicarbonate
- If hypoglycemia - isotonic saline with 5% glucose
- If increased intracranial pressure - saline purges and IV hypertonic glucose solution
- If respiratory depression - artificial respiration along with oxygen inhalation

#### **Chronic alcohol poisoning**

- Alcoholic dementia - gradual physical, moral and mental deterioration
- Cirrhosis of liver
- Delirium tremens - a state of excitement with hallucinations which usually lasts 3-4 days. Characterised by acute attack of insanity with symptoms of sleeplessness, marked tremors, excitement, fear and hallucinations chiefly visual and auditory.
- Korsakoff's psychosis - hallucinations, disorientation and multiple neuritis. Memory of recent events lost and he fills the gap by confabulation. This state lasts for about one month to a year.

- Acute hallucinosis - A state of hallucination chiefly auditory with systematized delusions of persecution lasting from weeks to months. It is a psychiatric emergency as patient may become homicidal or suicidal in response to hallucinations.

## **METHANOL**

- Headache, dizziness, nausea, vomiting
- Pain in abdomen
- Findings of intestinal contractions is diagnostic
- Marked muscular weakness and depressed cardiac action
- Dyspnea and cyanosis
- Temporary or permanent blindness
- Convulsions
- Death occurs from respiratory failure

### Treatment

- gastric lavage with sodium bicarbonate in warm water
- administration of ethanol as competitive antagonist
- Antidote 4-methylpyrazole is a specific alcohol dehydrogenase inhibitor
- Folinic acid to speed up metabolism of formic acid

## **SNAKE BITES**

- Poisonous snakes are elapids, vipers and sea snakes
- Elapids secrete neurotoxic venom (Cobra, king cobra common krait, banded krait, coral snake)
- Vipers secrete vasculotoxic venom. Vipers may be pit vipers (seldom fatal) or non pit vipers (dangerous)
- Sea snakes secrete myotoxic venom

## **NEUROTOXIC VENOM**

- neurotoxins and cholinesterase
- slight burning at site of bite which shows a triple response
- 15 min to 2 hours later - marked neurotoxic effect  
giddiness, lethargy, muscular weakness, spreading paralysis  
salivation and vomiting  
difficulty in speaking and swallowing  
ptosis and paralysis of extraocular muscles  
breathing slow and laborous
- A few hours later  
respiration cease with or without convulsions  
heart stops  
skin and cellular tissues surrounding bite mark undergoes necrosis

## **VASCULOTOXIC VENOM**

- venom include hemolysins, thromboplastin
- Locally - oozing of hemolytic blood, spreading cellulitis
- hemorrhages from external orifices
- serous and serosanguinous blisters sometimes appear
- nausea and vomiting
- collapse - cold clammy skin, rapid feeble pulse, dilated pupils insensitive to light

#### MYOTOXIC VENOM

- sharp initial prick becoming painless later
- 1-2 hrs later - generalised muscular pain and stiffness, starts in neck and limb girdle
- Myoglobinuria - characteristic brown discoloration of urine
- elevated serum transaminase
- hyperkalemia
- Respiratory failure

#### Treatment

- Allaying anxiety and fright of patient
- Prevention of spread of venom by immobilization, application of tourniquet, cleansing the wound, and incision and suction.
- Antivenin - specific or polyvalent
- Delayed serum sickness type of response is very common with antivenin and fatal anaphylactoid reaction may occur. It should, therefore, be given if signs of systemic poisoning e.g ptosis or hemorrhagic signs develop after snake bite.
- Generally for an adult, 60 ml of polyvalent serum is injected initially, one third being given subcutaneously or locally around the bite, the other third intramuscularly, and the remaining third intravenously. The IV dose can be repeated any time, if collapse appears or every 6 hours till symptoms disappear.
- Neostigmine-atropine therapy in case of elapid bite
- Heparin along with supportive fibrinogen transfusion in case of viper bite
- When antivenin is not available, local infiltration of carbolic soap around the site of bite in case of elapid snakes and Heparin in case of vipers is recommended

#### UNIVERSAL ANTIDOTE

- used in cases of unknown poisons
- 1 part Magnesium - neutralizes acids
- 1 part tannic acid - precipitates alkaloid and many metals
- 2 parts activated charcoal - absorbs alkaloid
- Mixture is taken one tbslp mixed with 500 ml of water - soon after ingestion of poison. Repeat once or twice

