

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال رب اشرح لي صدري ويسر لي امري واحلل عقدة
من لساني يفقهوا قولي

صدق الله العظيم

Case report:-

Four patients come to ER of Ain shams poison control center in January first patient 52years old female presented with headache, vomiting and history of fits.

second patient 25years old female presented with headache and dyspnea.

Third patient 19years old male presented with headache , vomiting and history of loss of consciousness.

fourth patient 15years old male presented with mild headache.

- What is the most probable diagnosis?
- Carbon monoxide
- Food poisoning
- Organophosphorurs poisoning

Differentiated by:-

History

Clinical examination

Investigations:-

Arterial blood gas

First patient
Metabolic acidosis
Ph:7.24
Hco3:19
Lactate level:
28mg / dl

second patient
Metabolic acidosis
Ph:7.32
Hco3:21
Lactate level :
20mg / dl

Third patient
Metabolic acidosis
Ph:7.27
Hco3:18
Lactate level:
31 mg / dl

Fourth patient
Ph:7.38
Hco3:24
Lactate level:
10 mg / dl

treatment

```
graph TD; A[treatment] --> B[First patient<br/>Oxygen<br/>150 ml mannitol<br/>dexamethasone]; A --> C[Second patient<br/>Oxygen<br/>dexamethasone]; A --> D[Third patient<br/>Oxygen<br/>150 ml mannitol<br/>Repeated dexamethasone]; A --> E[Fourth patient<br/>oxygen];
```

First patient
Oxygen
150 ml mannitol
dexamethasone

Second patient
Oxygen
dexamethasone

Third patient
Oxygen
150 ml mannitol
Repeated
dexamethasone

Fourth patient
oxygen

clinically

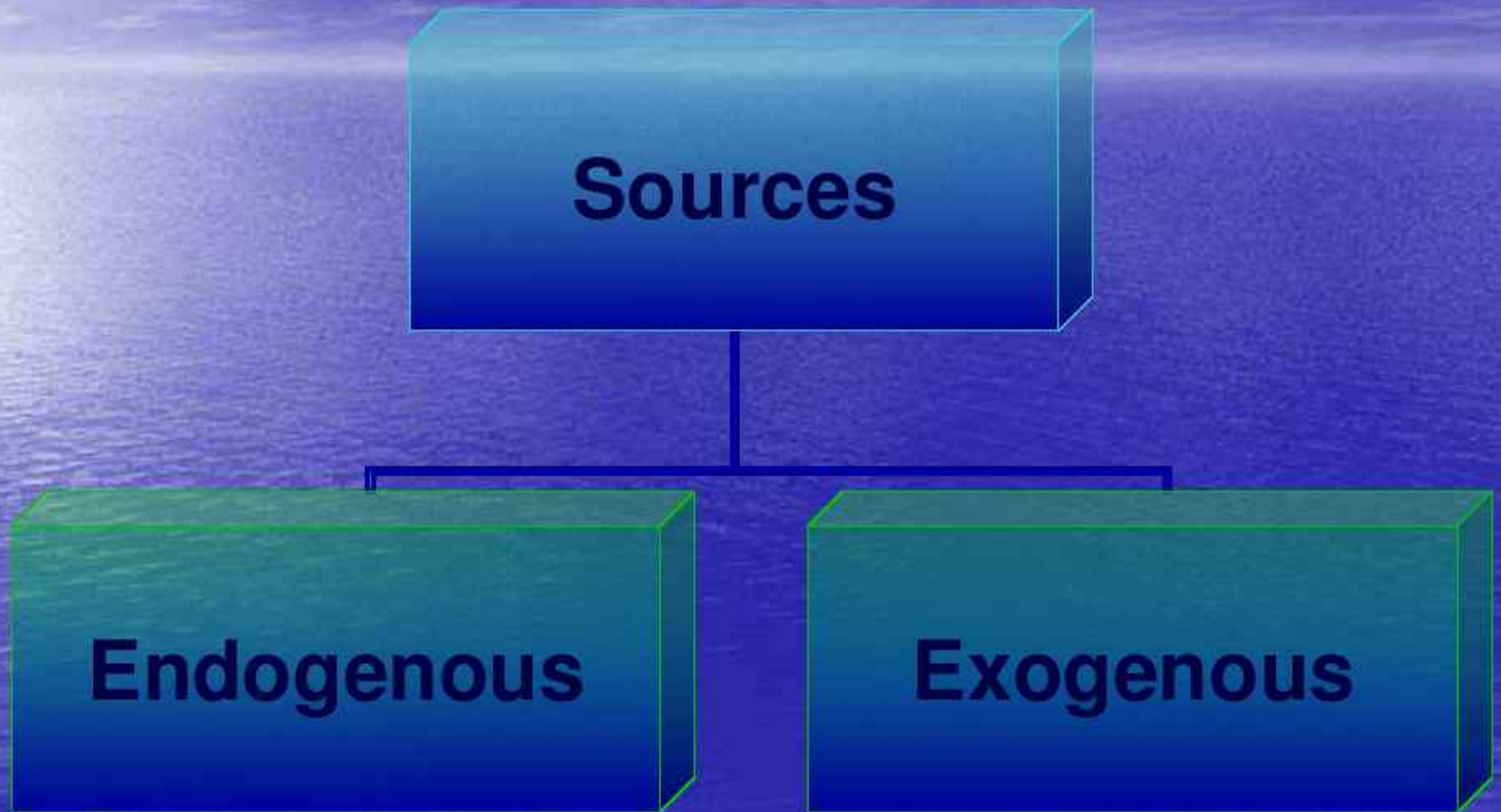
```
graph TD; A[clinically] --> B[No symptoms<br/>Only co exposure<br/>oxygen]; A --> C[Mild symptoms<br/>Oxygen<br/>Mannitol 20%<br/>dexamethazone]; A --> D[Sever symptoms<br/>ICU admission<br/>100% oxygen<br/>Hyperbaric oxygen];
```

**No symptoms
Only co exposure
oxygen**

**Mild symptoms
Oxygen
Mannitol 20%
dexamethazone**

**Sever symptoms
ICU admission
100% oxygen
Hyperbaric oxygen**

Physical properties:-



Factors affecting co toxicity:-

.age

- **Duration of exposure**
- **Concentrations of the gas**
- **Muscular activity of the person**
- **Decreased po₂ as in high altitude**
- **Cardiovascular or pulmonary disease**
- **Lowered hb% as in anaemia**
- **smoking**

Pathophysiology:-

- co has high affinity to bind to hb 200-250 times greater than oxygen
- Myoglobin impairment
- Binding to cytochrome oxidase
- Nitrous oxide

Acute toxicity

- **Neurological effects**
- **Cardiovascular effects**
- **Pulmonary complications**
- **Dermatological complications**
- **Effect on muscles**

Neurological effects:-

- **Throbbing headache**
- **Dizziness and nausea**
- **Ataxia ,visual and auditory abnormalities,confusion,convulsions and coma.**

Cardiovascular effects:-

- **Tachycardia**
- **Hypotension**
- **Dysrhythmia**
- **Angina up to myocardial infarction**

Pulmonary complications:-

- **dyspnea**
- **Tachypnea**
- **Pulmonary edema and pulmonary hemorrhage**

Ophthalmologic complications:-

- Blurred vision
- Decreased light sensitivity
- Decrease dark adaptation
- Retinal affection

Effect on muscles:-

- Rhabdomyolysis
- Myoglobinuria and rarely renal failure

Delayed neuropsychiatric sequelae:-

- **Dementia, memory problems, gait disturbance**
- **Parkinsonism, chorea**
- **Peripheral neuropathy**
- **Incontinence**
- **Paralysis**
- **Depression ,emotional liability, hallucinations**

Chronic low level exposure to CO:-

- Persistent headache
- Depression
- Confusion
- Nausea

Investigations

```
graph TD; A[Investigations] --> B[Laboratory<br/>COHb level<br/>ABG<br/>Cardiac markers]; A --> C[ECG and cardiac<br/>monitoring]; A --> D[Imaging<br/>Chest x ray<br/>Brain CT and MRI];
```

Laboratory
COHb level
ABG
Cardiac markers

ECG and cardiac
monitoring

Imaging
Chest x ray
Brain CT and MRI

Treatment:-

- Prophylactic measures
- Symptomatic treatment
- Curative measures

Symptomatic treatment:-

- Warmth
- Diuretics and corticosteroids
- Diazepam
- Bed rest
- Observation of patient to detect late complications.

Hyperbaric oxygen:-

- **Indications:-**
- **Syncope**
- **Coma**
- **Seizure**
- **Confusion**
- **Carboxy haemoglobin > 25%**
- **Fetal distress in pregnancy**
- **Metabolic acidosis with pH less than 7.20**
- **Pregnant patients with carboxy haemoglobin 10% or more**



Complications:-

- **Oxygen induced seizures**
- **Ear discomfort**
- **Tympanic membrane rupture**
- **Tension pneumothorax.**