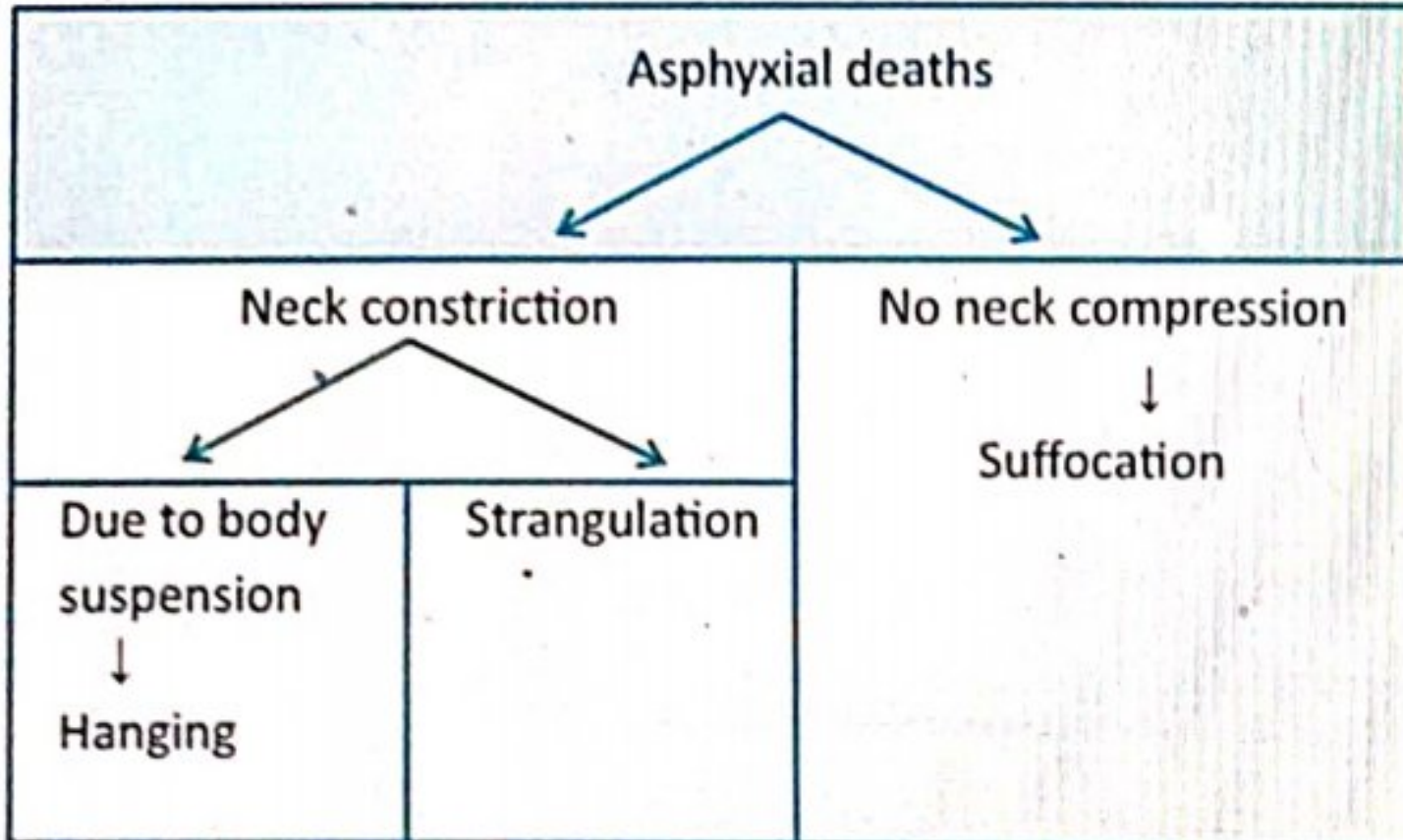


6 ASPHYXIA DEATHS



02:47:00



HANGING

- Compression of neck is due to body weight
- It is the most common method of committing suicide because it produces painless death.
- Types based on knot position
 - Typical hanging: Knot is placed at occiput
 - Atypical hanging: Knot is placed anywhere else
- Types based on position of body
 - Complete hanging: Whole body is suspended
 - Incomplete or partial hanging: If any part touches the ground and body is partially suspended

PM Findings

External findings

1. Glove and Stocking Distribution of Hypostasis
2. Face
 - Dribbling of Saliva (**SUREST SIGN OF ANTEMORTEM HANGING**)
 - LA facie Sympathique
 - One side eyelid open, pupil dilated, due to pressure over cervical sympathetic chain
 - These two are the signs of antemortem hanging
3. Ligature Mark: Oblique, Incomplete and above the thyroid
 - Sometimes transverse mark can be seen in partial hanging, slip knot



Important Information

- In case of ligature strangulation
 - Transverse
 - Complete
 - Below thyroid

Internal Findings

- Hyoid bone: Fracture Hyoid bone usually occurs > 40 yrs of Age and they are usually abduction fracture or side to side compression fracture
- Carotid Artery: **AMUSSAT** sign - Transverse intimal tear
- Vertebra: Fracture of C2 (B/L pedicle Fracture) - **Hangman's Fracture**
 - Position of hangman's knot - Ideal is submental,
 - Common position - Below the angle of mandible
- Usually seen with hanging with a long drop (Judicial Hanging)

Manner of Death

- Suicidal hanging is most common mode of hanging
- Homicidal hanging: Lynching
- Accidental hanging is common with sexual asphyxia also known as Autoerotic asphyxia
 - Aka Kotzwainism / Asphyxiophilia
 - Person constricts own neck → asphyxia → cerebral ischemia → hallucination → orgasm → not able to relieve constriction → death
 - Manner of death is Accidental

STRANGULATIONS (NECK COMPRESSION)

Types

- Ligature strangulation
- Manual Strangulation/ Throttling - Compression of neck by hands
 - Mugging
 - Garrotting

PM Findings

External

- Ligature Strangulation
 - Ligature mark below thyroid
 - Complete and transverse mark



- **Manual Strangulation**

- Nail Scratches / bruises
- Fingertip bruises can be seen – aka six penny bruises



Internal Findings

- Hyoid bone Fracture: Adduction Fracture
- Extensive / Intense contusion of soft tissues



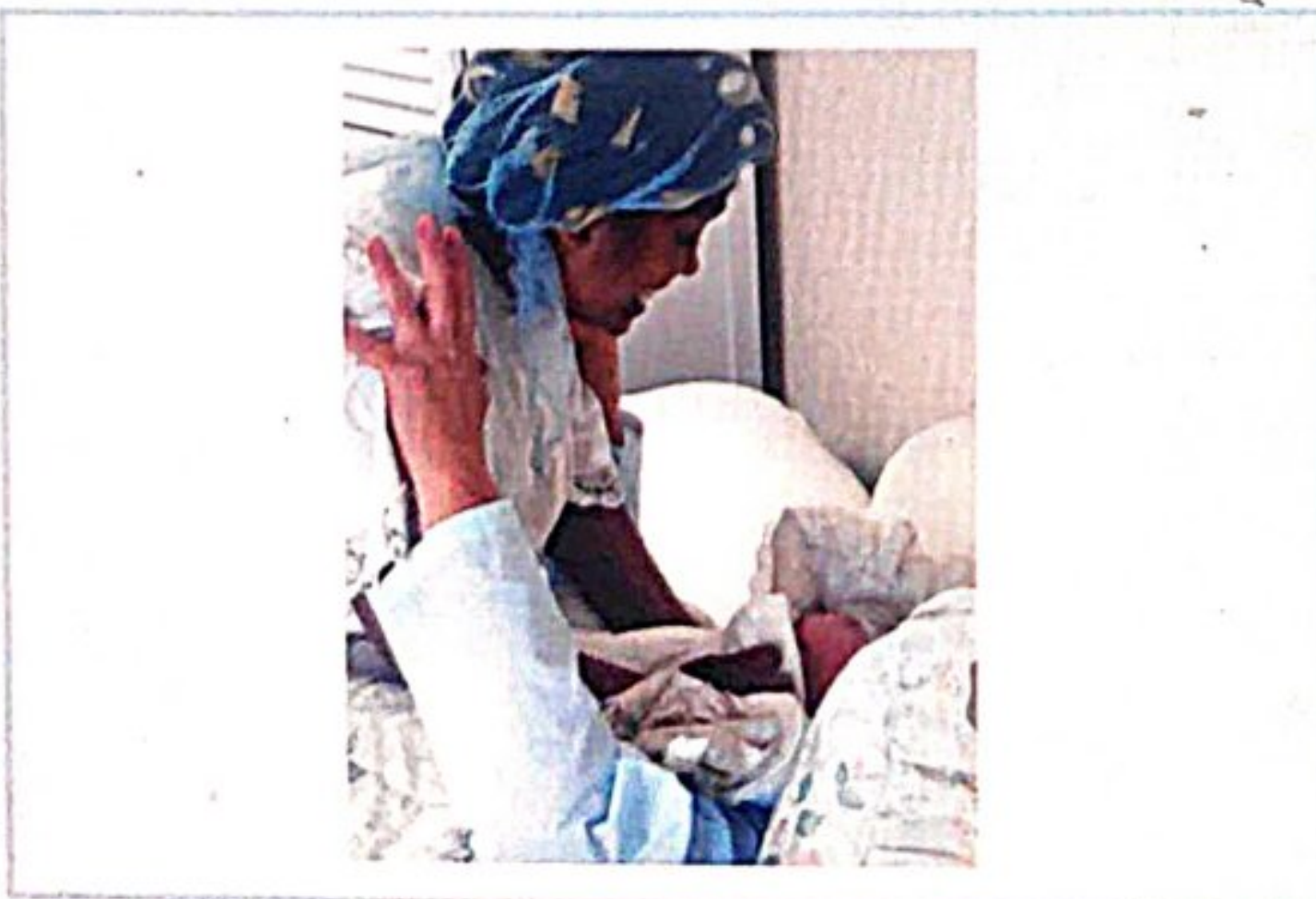
BANSDOLA: Done by Bamboo Stick

MUGGING: Using forearm/elbow

GARROTING: Thin ligature cord and twisted

SUFFOCATION DEATHS

- Smothering



- Obstruction of mouth and nostrils by hand or pillow.
- Can be accidental and homicidal
- Usually they are homicidal (perioral injuries can be seen,

Lip contusion, Nail scratch / Bruises)

- **Gagging**

- Obstruction of pharynx by Cloth/gag being thrust upon.



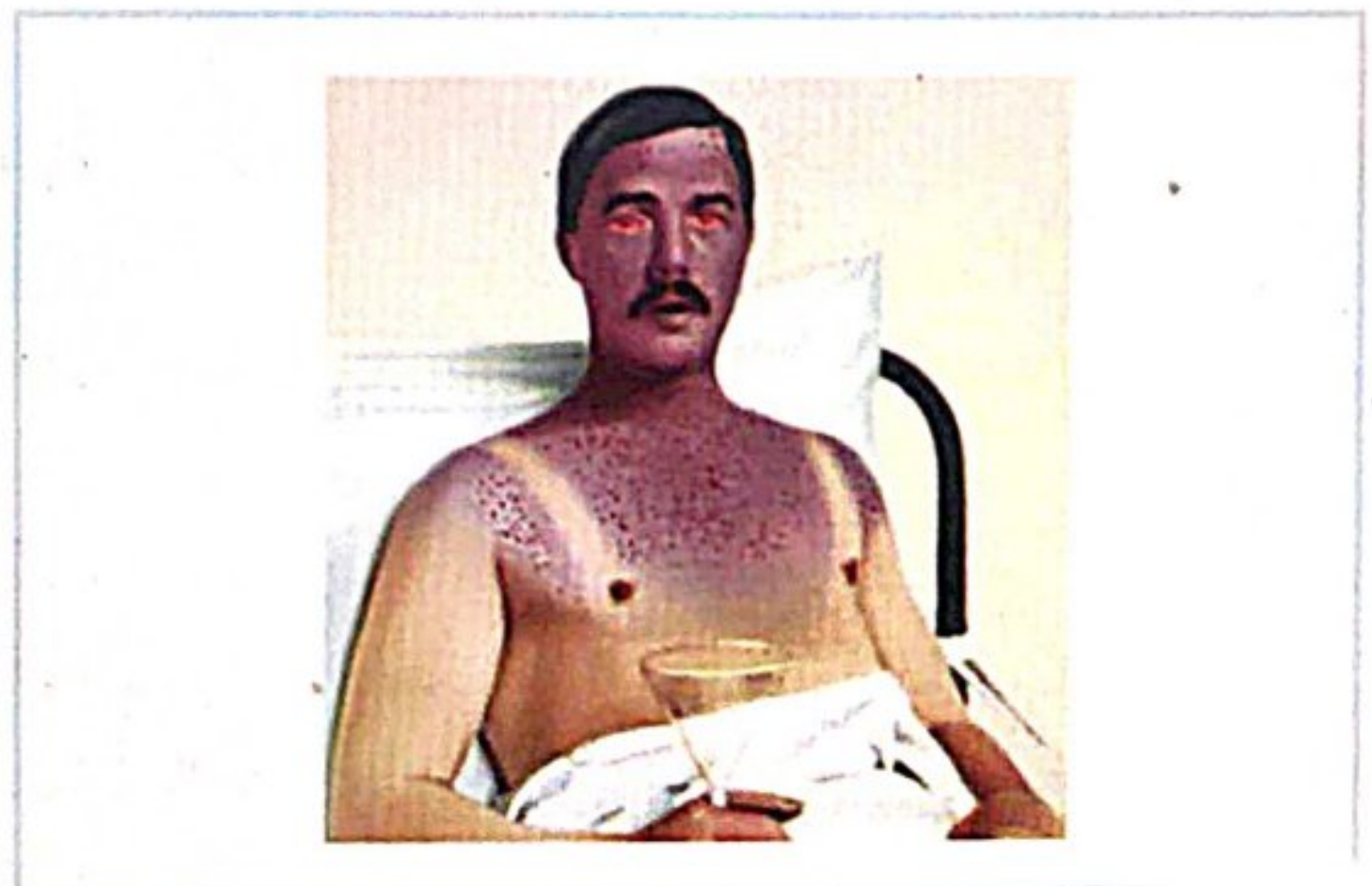
- **Choking**

- Obstruction of Airway by the foreign particle
- Usually it is Accidental
- E.g. Cafe Coronary Syndrome: Cause of Death - Asphyxia
- First aid - Heimlich manuvre



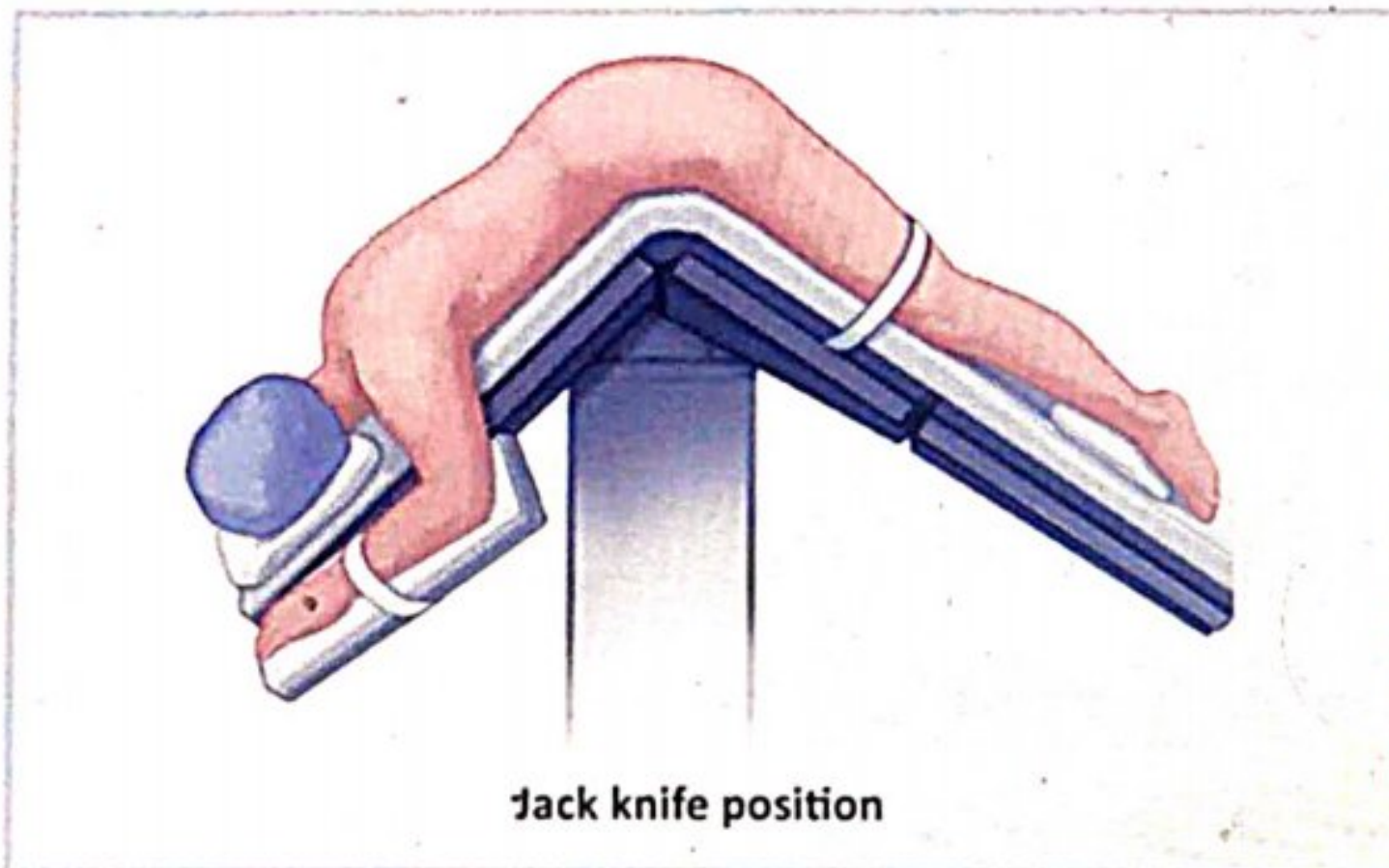
Traumatic Asphyxia

- Due to mechanical fixation of chest
- Cyanotic face seen – aka masque ecchymotique face
- At the level of weight area is pale.



Positional Asphyxia

1. Jack knife position
2. Inverted crucifixion



leading to death.

- Hb, Cl, Na, Mg, strontium (best) levels in blood rise. It is a relative rise due to haemoconcentration.



Burking

02:52:35

- Smothering + Traumatic Asphyxia



Overlaying

- Baby smothered by weight of mother while sleeping and rolled over the baby
- Combination of smothering with traumatic asphyxia

DROWNING

Types

03:13:20

- **Dry Drowning**
 - Vocal cord / Laryngeal spasm occurs and the water does not go into lungs - Dry lungs
 - Person dies because of asphyxia
- **Wet drowning - two types**
 - Fresh Water Drowning: Hypotonic water enters body → So **haemodilution** begins inside and due to it cell swells up and haemolysis occur. The haemolysis causes ↑↑ **Hyperkalaemia** leading to **Cardiac Arrhythmias** (Death)
 - Salt Water Drowning: Hypertonic water enters body → So **haemoconcentration** and all the fluid from the Blood comes to the alveoli → Severe **Pulmonary Edema** Occurs

Hydrocution/immersion syndrome

- Person falls in cold water which stimulates sensory receptors and vagus nerve gets stimulated which results in bradycardia → patient dies due to cardiac arrest (**Vagal inhibition of heart**)

Near drowning / secondary drowning – Patient dies of secondary complications like HIE and Pulmonary complication

PM Findings of Drowning

External

- **Cadaveric spasm**
 - Grass or weed clenched into hands
 - Specific sign of AM drowning
- **Froth in nostrils**
 - Due to water, mucus and surfactant - **Specific sign**
 - Froth nature - Fine, Tenacious, Persistent, lathery
- **Washer women's hands**
 - Wrinkling / bleached / soddened / peeling of skin.
 - Not specific for AM drowning.
 - Time since death can be find out.
- **Cutis Anserina / goose flesh**
 - Due to rigor mortis of erector pili muscles.
 - Not a specific sign of AM drowning.

Internal findings

- **Lungs**
 - Voluminous and edematous
 - Spongy/ Crepitant on touch because of the froth inside due to struggle of person in water known as **Emphysema Aquosum**. It tells that a conscious person drowned in water.
 - Mud particles in lower airway means person was breathing at the time of drowning **more specific**
 - **Paltauf's haemorrhage**: Haemorrhage on the surface of lung. Means person was struggling to breathe in water

which caused alveolar capillaries to rupture - **AM sign specific**

- Water in middle ear, stomach, small intestine - **AM sign specific**

Important Information

Emphysema Aquosum: Conscious person drowned
Edema Aquosum: Unconscious person drowned
Hydrostatic lung: Postmortem drowning

TEST IN DROWING

Gettler's Test: Difference of chloride concentration in the heart chambers

	Right Side Chambers	Left Side Chambers
Normal	Cl ⁻ = Cl ⁻	
Fresh water Drowning (due to haemodilution on left side)	Cl ⁻ > Cl ⁻	
Salt water Drowning (because of haemoconcentration on left side)	Cl ⁻ < Cl ⁻	

- This test not useful in
 - Dry drowning
 - Hydrocution
 - Patent foramen ovale

Diatoms Test

03:32:36

- Algae (Silica) will enter the blood from the lungs and will further goes to blood circulating in all the organs (e.g. Brain, Spleen, Bone marrow). So, it is AM drowning as circulation was intact.

Important Information

- Outer wall of diatoms is made of silica.

- In case of PM drowning diatoms will be present only in lungs not in other organs.

Lungs	Distant Organs (BM, Spleen, Brain)	
+	+	AM Drowning
+	-	PM Drowning

- Diatom test is not useful in dry drowning, hydrocution and advanced putrefaction

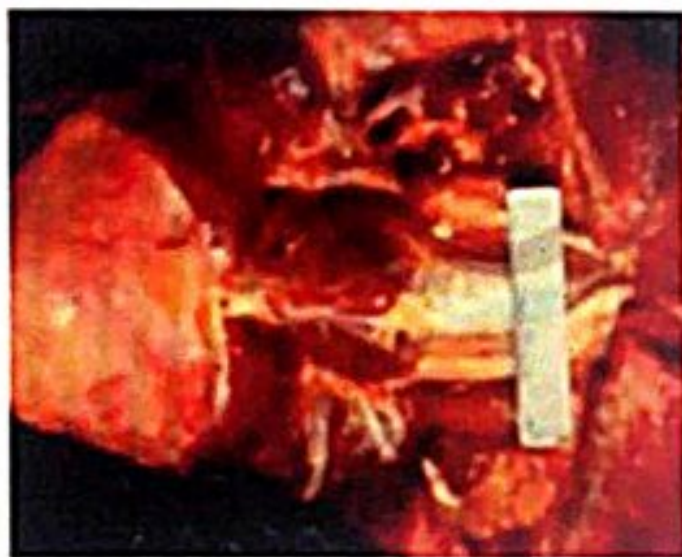


Previous Year Questions

Q. A person was found dead. Post-mortem shows nail scratches in the face, lip laceration in the inner side of the lip. Hypostasis is fixed. Which of the following cannot be the reason?
(FMGE Dec 2020)

- A. Cause was throttling
- B. Post-mortem was done within 24 hours
- C. Due to asphyxia
- D. It is Homicide

Q. A woman died in her room. Her room was unlocked. Her blood alcohol levels were 350 mg/ml. Image is shown below. On neck dissection, there was contusion present?
(AIIMS Nov 2018)



- A. Throttling
- B. Bandedola
- C. Cafe coronary
- D. Alcohol intoxication

Q. True about freshwater drowning?

(INICET NOV 2020)

- A. Hemodilution
- B. Hypokalemia
- C. Hyponatremia
- D. Arrhythmia

Q. Gettler's test is positive in?

(FMGE May 2018)

- A. Hanging
- B. Poisoning
- C. Strangulation
- D. Drowning

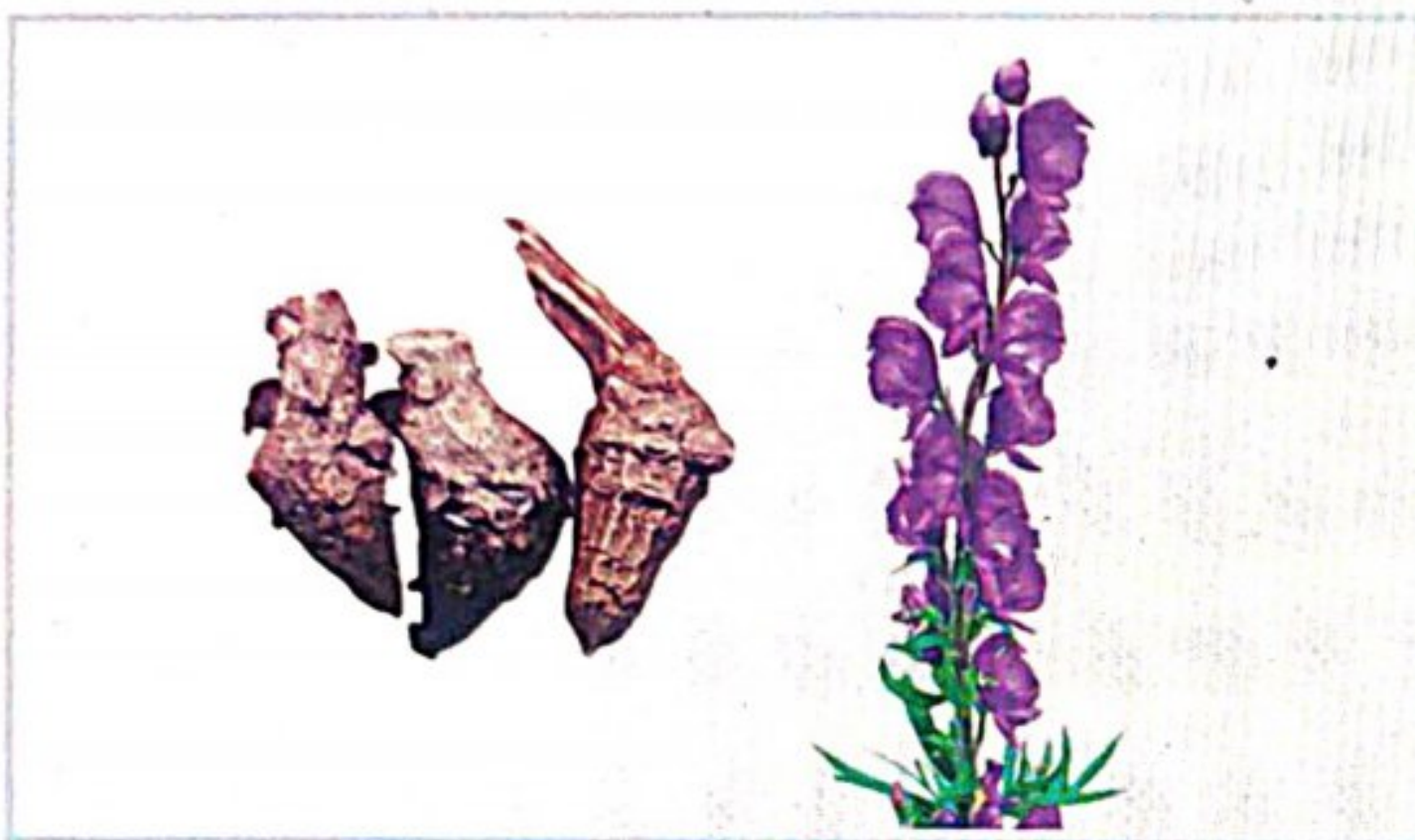
21 CARDIOTOXIC POISONS

- **CAR-DONA**

- **D** - Digitalis (fox glove)
- **O** - Oleander: Pink / yellow (Cerbera thevetia)
- **N** - Nicotine
- **A** - Aconite

Aconite / blue rocket / monk's hood / Mitha Zaher/devil's helmet

- Root is the most toxic



- Active principle: **Aconitine**
- MOA: Blocks voltage sensitive Na^+ channels
- Side effect
 - Paraesthesia over fingers, mouth and face
 - Hippius - Alternate dilatation & constriction of pupil
 - Cardiac arrhythmias: Both bradyarrhythmia & tachyarrhythmias
 - If bradyarrhythmia, Atropine to be given
 - If tachyarrhythmias, Give Amiodarone / or Flecainide for VF
 - Hyperkalemia is seen

Digitalis (Foxglove)



- Active principle - Cardiac glycosides

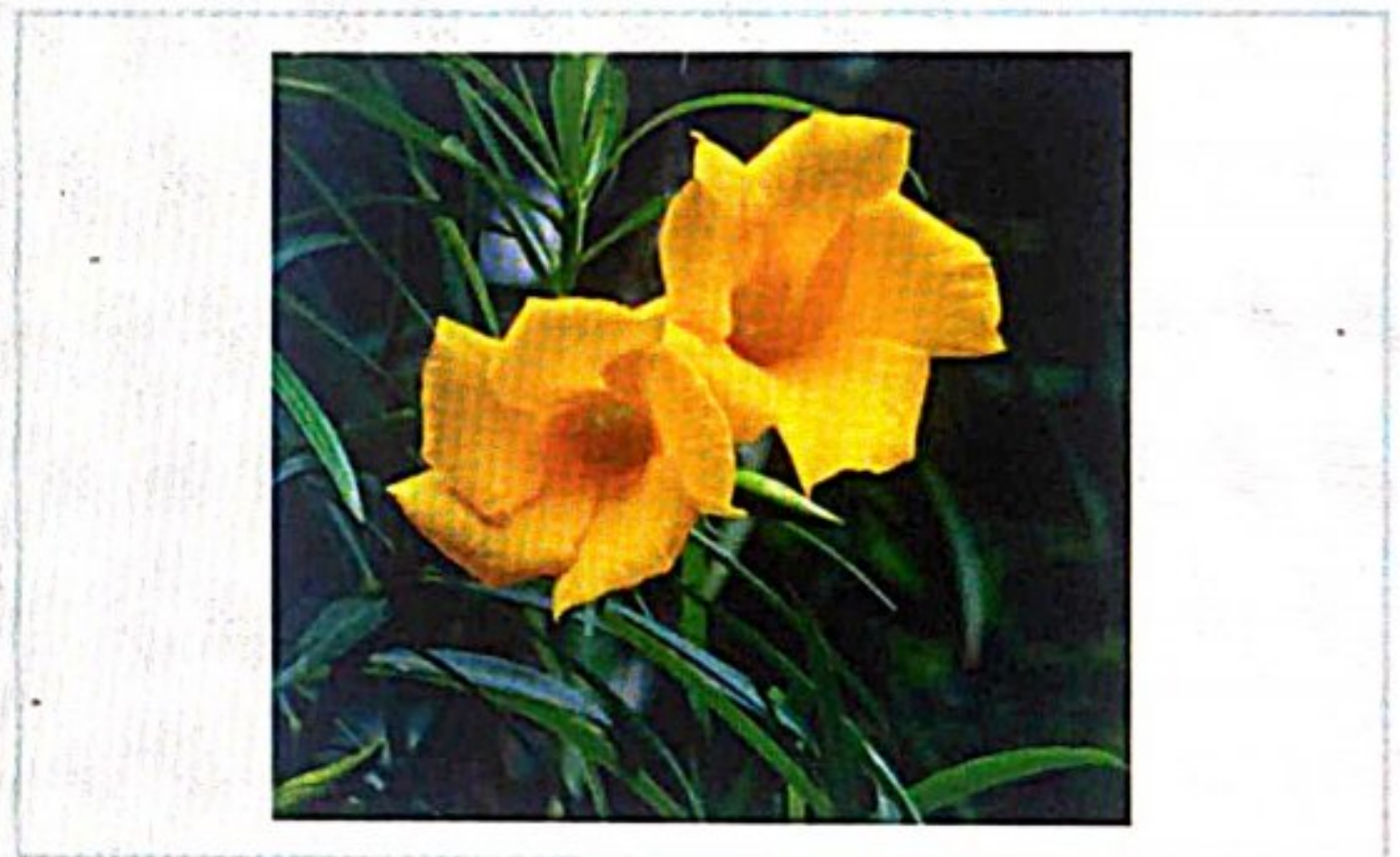
Nerium odorum also known as pink oleander / Kaner

- AP - Folinerin, Oleandrin



Cerbera thevetia / yellow oleander / Pila kaner

- Causes hypokalaemia / hyperkalaemia (cause of death)
- AP - Cerberin, Thevetin, Thevetoxin, Ruvoside, Peruvoside, Nerifolin.



Important Information

- All of them act through $\text{Na}^+ \text{K}^+$ Atpase pump
- So DIGIBIND is effective for all three of the above.



Previous Year Questions

Q. Choose the incorrect statement regarding the given image?

(AIIMS May 2018)



- A. Causes AV block
- B. Atropine is the antidote
- C. Only root is poisonous
- D. Sweet taste

22 ASPHYXIANTS



03:19:41

	CO	CYANIDE
FORM	gas	Hydrogen cyanide Hydrocyanic acid NaCN and KCN
Odour	Odourless	Bitter almond
Toxicity	210 times more affinity towards Hb	(-) Cytochrome enzyme (ETC)
Anoxia	Anemic anoxia	Histotoxic anoxia
Rx	High flow oxygen	Hydroxocobalamin Lilly's antidote It contains <ul style="list-style-type: none"> • Amyl nitrite • Na⁺ nitrite • Na⁺ thiosulphate Nitrites induces methhemoglobin
Test	Spectrometry Kunkel's test Hoppe- Seyler's test	Lee - Jones test
Hypostasis	Cherry red	Brick red



Previous Year Questions

Q. Among the following which has highest affinity for haemoglobin?
(FMGE 2022)

- A. Carbon monoxide
- B. Oxygen
- C. Nitrogen
- D. Carbon dioxide

23 MISCELLANEOUS



OPC	CARBAMATES	ORGANOCHLORINE	PYRETHROIDS
Irreversible inhibition of AChE	Reversible inhibition	Inhibits nerve transmission	Inhibits Na ⁺ channels
RX= Atropine & Oximes	Atropine	Symptomatic Rx	Symptomatic Rx
		e.g = DDT, ENDRIN	