



**Round : Forensic Medicine**

**Group no : A4**

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# The Stages of Asphyxia:

HB without oxygen

**1. Stage of dyspnea:** Lack of oxygenation-reduced hemoglobin increases-Forced respiration-Facial congestion with cyanosis

**2. Stage of convulsions:** hypercarbia, cyanosis , **constricted pupils** , convulsions, **hypertension**

**3. Stage of paralysis:** irreversible brain damage, **Dilated fixed pupils** , Death occurs in about 5 minutes , Muscle relaxation,

**Drop of blood pressure** , Deepening of cyanosis , Loss of consciousness , Irregular breathing (**Chyne-stocks**) breathing

Petechial hemorrhages other name is **Tardieu s spots**: They are caused by an **acute rise in venous pressure**

Visceral congestion: due to **obstructed venous return** and capillovenous congestion.

## mechanical asphyxia can be grouped into three categories:

1.suffocation such as (Smothering,choking, gagging, traumatic asphyxia, overlaying)

2.pressure on the neck(hanging and strangulation)

3.drowning

### Suffocation 1.Smothering

**1.with pillows:** no marks on the face, there may be some bruising in the lips

**2.with hands:** fingernail abrasions on the nose and mouth, and bruising of the lips.

**3.with plastic bags:** no specific findings at autopsy

The heart will continue to beat even after flattening of the EEG, but respiration will not return spontaneously if the smothering is stopped. **The individual must be resuscitated.**

**2.choking**  $\Rightarrow$  Vagal stimulation  $\Rightarrow$  arrhythmia

**1.Natural pathological choking:** acute fulminating epiglottitis, obstruction of the airway by the inflamed epiglottis

**2.Homicidal choking:**

A. in Infants, by backing toilet paper or cotton into their mouth and pharynx.

B. Adults, this may be due to gagging, cloth or soft object is pushed into the mouth to silence the individual, The cloth can obstruct the posterior pharynx, causing the individual to choke

**3.Accidental choking:** Blockage of the posterior pharynx and larynx by food or foreign objects

**4.Suicidal choking:** occur in psychiatric patients and prisoners

**CAFE CORNARY:** is due to reflex vagal inhibition.

## Pressure on the neck(hanging, strangulation)

### A. Hanging

**1. complete:** not touching the ground

**2. incomplete:** any part of the body touches the ground

**3 Typical hanging:** point of suspension is Placed centrally over the **occiput**, i.e. the knot is at the nape of neck on the back.

**4. Atypical hanging:** Knot of ligature is anywhere other than on the occiput.

Differentiation 10.1: Antemortem and postmortem hanging

| S.No. | Feature                                                                                                                                                              | Antemortem hanging                                               | Postmortem hanging                                                |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------|
| 1.    | Salivary dribbling mark                                                                                                                                              | Present                                                          | Absent                                                            |
| 2.    | Fecal/urinary stains                                                                                                                                                 | May be present                                                   | Absent                                                            |
| 3.    | Ligature mark <ul style="list-style-type: none"><li>Direction</li><li>Continuity</li><li>Level in the neck</li><li>Parchmentization</li><li>Vital reaction</li></ul> | Oblique<br>Non-continuous<br>Above thyroid<br>Present<br>Present | Circular<br>Continuous<br>At or below thyroid<br>Absent<br>Absent |
| 4.    | Knot                                                                                                                                                                 | Single, simple, on one side of neck                              | Multiple, granny or reef type on occiput/chin                     |
| 5.    | PM staining <ul style="list-style-type: none"><li>Above ligature mark</li><li>In lower limbs</li><li>Glove-stocking like</li></ul>                                   | Present<br>Present<br>Present                                    | Absent<br>Absent<br>Absent                                        |
| 6.    | Evidence of injury <ul style="list-style-type: none"><li>Self-inflicted</li><li>Struggle</li><li>Tear of carotid artery intima</li><li>Imprint abrasion</li></ul>    | Present<br>Absent<br>Present<br>Present                          | Absent<br>Present<br>Absent<br>May/may not be present             |
| 7.    | Elongation of neck                                                                                                                                                   | Present                                                          | Absent                                                            |
| 8.    | Cyanosis                                                                                                                                                             | Deeply positive                                                  | Absent or faintly present                                         |
| 9.    | Emphysematous bullae on lungs                                                                                                                                        | Absent                                                           | Present                                                           |
| 10.   | Point of suspension                                                                                                                                                  | Compatible with self-suspension                                  | Not so                                                            |
| 11.   | Histochemistry of ligature mark                                                                                                                                      | Increased serotonin and histamine                                | Not so                                                            |

**✱ Venous congestion:** Jugular veins are blocked by the ligature

**✱ Delayed deaths are rare which may be due to:**

1. Aspiration pneumonia

2. Edema of lungs, larynx

3. Infections

4. Infarction of brain

5. Hypoxic encephalopathy

6. Abscess of brain.

**✱ Dribbling of saliva:** due to pressure on the submandibular glands.

**✱ Dilated pupils:** If the knot presses on cervical sympathetic, eye of the same side



\* On neck the ligature mark shown as an **oblique**, incomplete mark

\* It take an **inverted y** - shaped at the **apex** & V at the point of suspension

\* Above the thyroid cartilage

\* Hyoid bone fracture

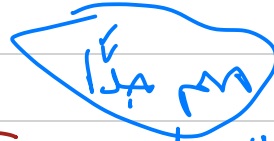
## B.1. ligature Strangulation

\* Completely encircles the neck or may incomplete.

\* Ligature mark is transverse  $\Rightarrow$  **Strangulation - Transverse** كيف تظفرها كمين

\* Below the larynx

\* Fracture of thyroid cartilage



## B.2. Throttling

\* Tears in the carotid artery.

\* Fractures of the hyoid bone and or thyroid cartilage

# Drowning

## A. Typical drowning

**1. in fresh water:** hemodilution and hemolysis, ventricular fibrillation, death in 4-5 min lungs are over distended, alveolar walls are torn and structures are disrupted

**2. in salt water:** hemoconcentration with crenation of RBCs, but not hemolysis, pulse pressure decreases slowly and is followed by A-V dissociation, death in 8-10 min, lung is better preserved

### Sure signs of death in wet water:

A. Cadaveric spasm B. Foam \_ froth

## B. Dry drowning

Two mechanisms have been postulated:

1. Reflex cardiac arrest due to vasovagal stimulation.

2. Laryngeal spasm and airway closure causing lethal hypoxemia