

DROWNING AND IT'S MEDICOLEGAL ASPECTDr. Neelam Malviya*¹ and Dr. Prafulla²¹MD Scholar Dept. of Agad Tantra Evam Vidhi Vaidyak.²Reader Dept. of Agad Tantra Evam Vidhi Vaidyak, Rani Dullaiya Smriti Ayurved P.G. Mahavidyalaya Evam Chikitsalaya, Bhopal (M.P.).***Corresponding Author: Dr. Neelam Malviya**

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ABSTRACT

Drowning is a major, but often neglected, public health problem. Drowning is the second leading cause of death from unintentional injuries, after road traffic injuries. According to the world health organization, 0.7% of all deaths worldwide (>500,000 deaths) each year are due to unintentional drowning. The south Asian countries have higher deaths rates by drowning compared to the world average. Among drowning survivors, approximately 69% have complete neurological recovery, 28% suffer some selective deficit, and 3% survive in a permanent vegetative state. In India, very little is known about the epidemiology of drowning. Low- and middle-income countries are the most affected, accounting for 91% of unintentional drowning deaths. There is almost no awareness or protocols to prevent drowning.

KEYWORDS: Drowning, Biochemical test, Wet drowning, Dry drowning.**Definition**

Drowning is defined as the mode of violent asphyxial death, in which entry of air into the lungs is prevented by presence of water or any other fluid in lungs and respiratory passages, water having entered through nose and mouth.

Classification**1. Typical or Wet Drowning**

- (a) Fresh water drowning
- (b) Salt water drowning

2. Atypical Drowning

- a) Dry drowning- In dry drowning, water does not enter the lungs due to laryngeal spasm induced by small amounts of water entering the larynx.
- b) Immersion syndrome- It refers to syncope resulting from cardiac dysrhythmias on sudden contact with water that is at least 5°C lower than body temperature.
- c) Near drowning- Near drowning refers to survival beyond 24 hrs. after a submersion episode.
- d) Shallow water drowning- Alcoholics, drugged, epileptics, infants, children and unconscious persons may die due to drowning in shallow water in a pit or drain.

Stages & Mechanism of Drowning

- **Buoyancy**
 - **As per Polson**
1. Froth – white, fine

2. Cadaveric spasm
3. Cutis anserine (Goose skin)
4. Washer women like hands & feet

Signs and Symptoms

Apart from recalling of memory of past events, there may be mental confusion along with auditory and visual hallucinations, in wet drowning, there is chest pain.

Fatal Period

- Fresh water drowning 4-5 minutes.
- Sea water drowning 8-12 minutes.

Treatment

1. To restore the blood gas levels by artificial respiration and oxygenation.
2. To restore the blood volume by giving packed cells in fresh water drowning and plasma in salt water drowning.
3. To restore the acid-base balance by giving necessary electrolytes.
4. To restore the cardio-respiratory function.
5. To restore the body temperature.

Causes of Death in Drowning

- 1) Asphyxia - Water
 - Froth
 - Laryngeal spasm
- 2) In fresh water drowning -
 - (a) Ventricular fibrillation
 - (b) Cerebral anoxia

- 3) In salt water drowning
 - (a) Pulmonary oedema
 - (b) Myocardial anoxia
- 4) Neurogenic shock
- 5) Hypotension
- 6) Cerebral oedema
- 7) Hypothermia
- 8) Electrolyte imbalance
- 9) Injuries during fall
- 10) Metabolic acidosis
- 11) Unconsciousness during fall
- 12) Infections from water
- 13) Exhaustion

P.M. appearance

External findings

1. Face is pale, becomes bloated and discoloured with putrefaction, cyanosis is present.
2. Eyes are found half open or closed conjunctiva suffused and pupils are dilated, subconjunctival haemorrhages may be present in lower eyelids.
3. Tongue may be swollen and protruded.
4. P.M. Staining – Light pink in colour, present over face, neck, front of upper part of chest, upper and lower limbs as the body usually floats with face down legs and arms hanging.
5. Rigor mortis becomes established in 8-10 hours.
6. After decomposition, body floats as supine.
7. Rarely body is converted into adipocere.

Internal Findings

- 1) Changes in respiratory system.
- 2) Changes in GIT.
- 3) Changes in Other viscera.
- 4) Biochemical changes.
- 5) Presence of diatoms.

Medicolegal Aspects of Drowning

- 1) Identification
- 2) Antemortem drowning
- 3) Suicidal / homicidal / accidental
- 4) Duration of submersion in water
- 5) Scuba diving
- 6) Difficulties in diagnosis
 - a) In a death due to drowning, typical findings may be absent in
 - Atypical drowning.
 - After decomposition.
 - b) Injuries found on body-
 - (1) Suicidal (2) Homicidal (3) Accidental (4) P.M. injuries

DISCUSSION

- Drowning is a serious but neglected health problem in the Malabar region of Kerala.
- Early adolescents, specially boys, tend to explore the environment, and this may explain the peak incidence of drowning events in this age group.

- Drowning is the second leading cause of death from unintentional injury, after road traffic injuries.
- Rigor mortis becomes established in 8-10 hours. After decomposition, body floats as supine.
- Rarely body is converted into adipocere.
- Presence of diatoms-Is the confirmatory test for drowning.
- Accidental drowning is most common, and seen in children, bathers, intoxicated and epileptic subjects.
- Suicide by drowning is fairly common in India, especially among females.
- By this study we understood that following are the confirmatory signs of drowning-
 1. Froth – white, fine
 2. Cadaveric spasm
 3. Cutis anserine (Goose skin)
 4. Washer women like hands & feet

CONCLUSION

Drowning has been a controversial subject medico-legally,

Prevention

Always practice water safety, and supervise children in pools or hot tubs, at beaches, and by other bodies of water.

If a person shows symptoms of trouble breathing or a lack of oxygen, receiving medical care immediately will increase their chance of survival.

Many deaths due to accidental drowning may be reduced. It includes: fencing of the swimming pool, covering up the wells or open barrels with grills, installation of pool alarms, use of personal protection, ensuring the availability and use of personal floatation devices- life jackets, increasing awareness amongst parents and guardians, providing lessons in swimming skills and CPR. Authorities to take steps to prevent this hazard that is being faced by a large population especially near water bodies.

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