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"MEDICO LEGAL ASPECTS OF DROWNING"

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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 death 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.

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KEY WORDS:- Drowning, Public Health, Unintentional Injury, Asphyxia, Prevention

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INTRODUCTION

Drowning is a major but often neglected public health problem. It is defined as a form of violent asphyxial death in which the entry of air into the lungs is prevented due to the presence of water or any other fluid in the respiratory passages after entering through the nose and mouth.

Globally, drowning is one of the leading causes of death from unintentional injuries, second only to road traffic accidents. It accounts for a significant number of deaths each year, especially in low- and middle-income countries. In addition to mortality, drowning can lead to serious neurological complications among survivors. Despite its high burden, awareness and preventive measures remain inadequate, particularly in developing countries like India.

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.

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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 people, epileptics, infants, children and unconscious persons may die due to drowning in shallow water in a pit or drain.

Stage and Mechanism of Drowning –

Buoyancy –

As per Polson

1. Froth – white, fine

2. Cadaveric spasm

3. Cutis anserine (goose skin)

4. Washerwomen like hands & feet

Signs and Symptoms

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

Fatal Period

Freshwater drowning: 4-5 minutes.

Seawater 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

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3) In saltwater 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

13) Exhaustion

P.M. appearance

External findings

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1. The face is pale and becomes bloated and discoloured with putrefaction; cyanosis is present.

2. Eyes are found half open or closed, conjunctiva is suffused and pupils are dilated; subconjunctival haemorrhages may be present in lower eyelids.

3. The tongue may be swollen and protruded.

4. P.M. Staining – Light pink in colour, present over the face, neck, front of the upper part of the chest, and upper and lower limbs, as the body usually floats with the face down and legs and arms hanging.

5. Rigour mortis becomes established in 8-10 hours.

6. After decomposition, the body floats in a supine position.

7. Rarely body is converted into adipocere.

Internal Findings

1) Changes in respiratory system.

2) Changes in GIT.

3) Changes in otheris the body 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

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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.

- Rigour mortis becomes established in 8-10 hours. After decomposition, body floats as supine.
- Rarely is the body 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.
- Through this study we understood that the following are the confirmatory signs of drowning:

1. Froth – white, fine

2. Cadaveric spasm

3. Cutis anserine (goose skin)

4. Washerwomen like hands & feet

CONCLUSION

Drowning has been a controversial subject medicolegally, 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 flotation devices – life jackets, increasing awareness amongst parents and guardians, and 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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