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Anaesthetic & Operative Deaths: section 106 B BNS.

→ fatal blood concentrations:

- diethyl ether ⇒ 180 mg %
- divinyl ether ⇒ 50 mg %
- ethyl chloride ⇒ 40 mg %
- halothane ⇒ 20 mg %
- tetrachloroethylene ⇒ 50 mg %

[alcohol ⇒ 500 mg %]

Causes of Anaesthetic & Operative Deaths:

1] Inexperience & failure to adopt precautions when clearly indicated:

- intubation & bronchoscopy → vagal inhibition if depth of anaesthesia is inadequate.
- inadequate ventilation → hypoxia → sudden death due to heart failure
- post-operative respiratory obstructions ⇒ by tubing or swabs
- breathing circuit disconnections
- haste, distraction
- Excessive pressure on airway → rupture of lungs
- Positive pressure ventilation ⇒ converts a simple pneumothorax into tension pneumothorax.
- Intubation of oesophagus instead of trachea

2] Clinical factors:

- Underventilation
- Low blood volume
- inadequate transfusion
- inhalation of regurgitated material (vomitus)
- anoxia
- inadvertent hypothermia
- hyperpyrexia

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3] Technical mishaps:

- administration of incompatible blood
- infusion of wrong drug or fluid (sodium citrate for NS / anaesthetic of greater strength than required / adrenaline instead of cocaine / etc.)
- equipment failure
- inadvertent inhalation (of gauze/swabs/dentures)
- mislabeling of oxygen & anaesthetic gases
- ignition of inflammable anaesthetic vapour by an electric spark

Malignant Hyperpyrexia / Hyperthermia (MH): rare, life-threatening condition triggered by exposure to certain general anaesthetics (particularly all volatile anaesthetics), nearly all gas anaesthetics & the neuromuscular blocking agent Succinylcholine.

Investigation of Anaesthetic & Operative Deaths:

I] Preliminary Investigations:

1] Visit to the OR: check all equipment

2] History: H/o exposure to relevant & potentially toxic chemicals during hospitalization, hospital stay, preanaesthetic preparation & anaesthetic period.

3] Existing diseases: high risk surgical conditions like:
- resection of aortic aneurysm & repair.

4] Anaesthesia: - anaesthetic used
- correct method of administration
- inadvertent wrong mixing of anaesthetic agents
- duration of anaesthesia

5] Equipment: check of correct mixing of gases was ensured.

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II] Autopsy:

1] Examine all devices in-situ:

→ devices attached to & inserted into the body must not be removed before sending for PM.

2] Examination of operation site

3] Look for artifactual findings

4] Surgical errors – ligation of a wrong vessel
– inadvertent ligation of ureter, bile duct
– perforation of large blood vessel
– inadvertent removal of a vital organ.

5] Brain: – hypoxic changes in hippocampal gyrus & cerebellum
– diffuse severe leukoencephalopathy of cerebral hemispheres with sparing of immediate subcortical connecting fibres.
– demyelination & obliteration of axon
– infarction of basal ganglia
– damage is limited to white matter.

III] Samples to collect:

1) Blood
2) Exudates, pus
3) Samples from all organs
4) Both lungs must be tied & submitted for toxicology
5) Alveolar air
6) Gases from cavities, heart & blood vessels