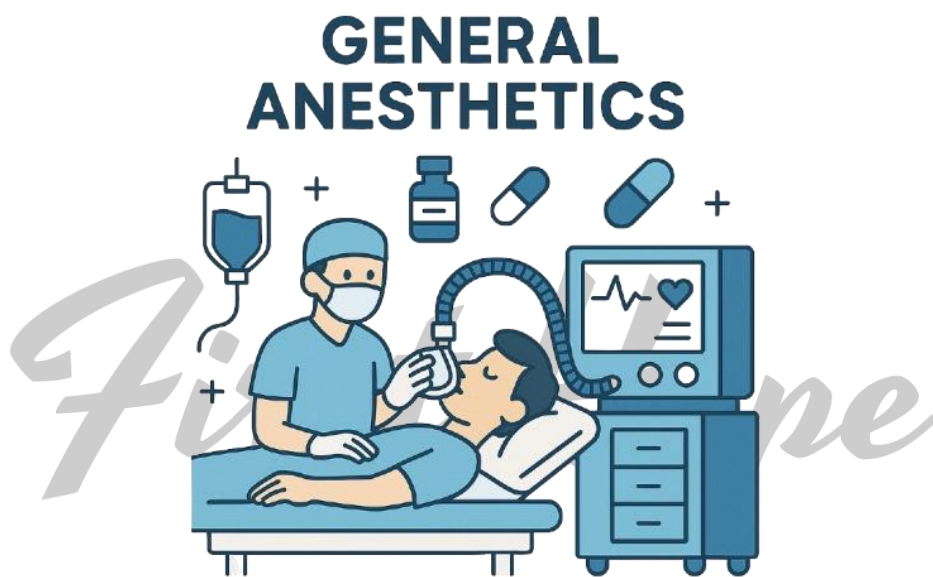


General Anesthetics

General Anesthetics

Definition:

- General anesthetics are drugs that induce a reversible loss of consciousness.
- They are used during surgical procedures to render the patient unconscious, unresponsive, and incapable of feeling pain.
- Administration routes:
 - Intravenous (IV)
 - Inhalation



Stages of General Anesthesia

General anesthesia is typically divided into four stages, from the initial administration to the complete recovery of the patient:

1. Stage 1: Analgesia (Induction)

- This stage begins with the administration of the anesthetic and continues until the patient loses consciousness.
- During this period, the patient is awake and alert, but their pain threshold increases.

2. Stage 2: Excitement (Delirium)

- This stage occurs after the patient loses consciousness but before the onset of regular breathing.
- It is **characterized** by irregular breathing, elevated heart rate, and involuntary movements.

3. Stage 3: Surgical Anesthesia

- This is the desired stage for surgical procedures.

- The patient is unconscious and unresponsive, with no reflexes or awareness. Breathing becomes regular, and involuntary movements cease.

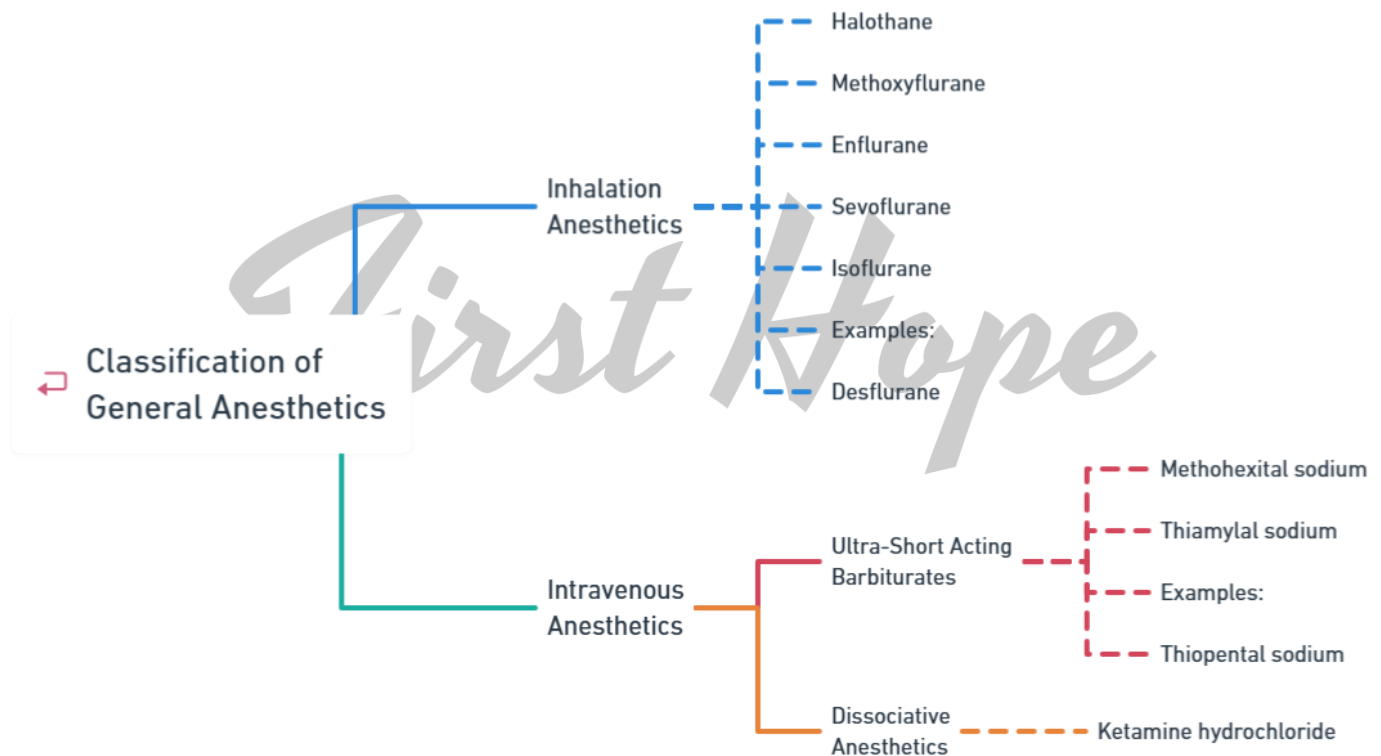
4. Stage 4: Overdose

- This is a dangerous and potentially fatal stage, marked by severe depression of the brain.
- It may lead to cessation of respiration and circulatory failure if not promptly addressed.

Classification of General Anesthetics

General anesthetics are classified based on:

- Route of Administration
- Chemical Structure



1. Inhalation Anesthetics

- These are **gases or volatile liquids** administered via inhalation.
- Common for their **ease of control** and **pleasant induction**.

Examples:

- Halothane
- Methoxyflurane
- Enflurane
- Sevoflurane
- Isoflurane

- Desflurane

2. Intravenous Anesthetics

- Administered through the **bloodstream**.
- Commonly used for **induction**, followed by maintenance with inhalation agents.

A. Ultra-Short Acting Barbiturates

- Rapidly act on the **central nervous system** to induce unconsciousness.

Examples:

- Methohexital sodium
- Thiamylal sodium
- Thiopental sodium

B. Dissociative Anesthetics

- Induce **analgesia and amnesia** without full loss of consciousness.

Example:

- Ketamine hydrochloride

General Anesthetics Classification Table

Class	Mode of Action	Uses	Common Side Effects	Examples
Inhalation Anesthetics	Enhance GABA-A receptor activity, inhibit NMDA receptors (varies by drug), causing CNS depression	Induction and maintenance of general anesthesia	Hypotension, respiratory depression, nausea, hepatotoxicity	Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane
Ultra-short Acting Barbiturates	Potentiate GABA-A receptor activity, leading to CNS depression	Induction of anesthesia, short procedures	Respiratory depression, hypotension, hangover effect	Methohexital sodium*, Thiamylal sodium, Thiopental sodium
Dissociative Anesthetics	NMDA receptor antagonist; causes functional dissociation between cortical and limbic systems	Induction of anesthesia, minor procedures, especially in children	Hallucinations, increased intracranial pressure, hypertension, emergence delirium	Ketamine hydrochloride*



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