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Pre-anaesthetics

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ANAESTHESIOLOGY

- **Anesthesiology :**
  [**Gk**. *an*- not + *aisthesis*- perception + *logia*- study]

- It is that branch of medicine which is concerned with the administration of anaesthetics & the management of the patient under anaesthesia.

DEFINITION OF ANAESTHESIA

- It is a pharmacologically induced and reversible state of amnesia, analgesia, loss of responsiveness, loss of skeletal muscle reflexes, decreased stress response, or all of these simultaneously.

- It is a reversible condition of comfort, quiescence and physiological stability in a patient before, during and after performance of a procedure.

- These effects can be obtained from a single drug which alone provides the correct combination of effects, or occasionally a combination of drugs (such as hypnotics, sedatives, paralytics and analgesics) to achieve very specific combinations of results.

Types of anaesthesia:

- **General anaesthesia :**
    1. Injectable anaesthesia
    2. Inhalation anaesthesia
- **Local anaesthesia :**
    1. Topical anaesthesia
    2. Field block
    3. Regional nerve block
- **Other :**
    1. Electronarcosis
    2. Acupuncture
    3. Hypothermia

“GENERAL ANAESTHESIA”

General Anaesthesia :

- It is a state of unconsciousness produced by a process of controlled, reversible, intoxication of the central nervous system in which there is a lowered sensibility to stimuli from the environment and a diminished motor response to such stimuli.

- Intravenous anaesthesia in veterinary practice is primarily used for the induction of anaesthesia which is subsequently maintained by inhalation anaesthesia in small animals.

Cardinal Features of General anaesthesia :

- Loss of all sensations
- Sleep and Amnesia
- Immobility or Muscle relaxation
- Abolition of reflexes – somatic and autonomic

Triad of General anaesthesia :

- need for unconsciousness
- need for analgesia
- need for muscle relaxation

Stages of General Anaesthesia-

- **Also called Guedel's signs**
- **Typically seen in case of Ether**(Slow action as very much lipid soluble)

Stage I: Stage of Analgesia

- Starts from beginning of anaesthetic inhalation and lasts upto the loss of consciousness
- Pain is progressively abolished during this stage
- Patient remains conscious, can hear and see, and feels a dream like state
- Reflexes and respiration remain normal
- It is difficult to maintain - use is limited to short procedures only

Stage II: Stage of Delirium and Excitement:

- From loss of consciousness to beginning of regular respiration
- Excitement - patient may shout, struggle and hold his breath
- Muscle tone increases, jaws are tightly closed.
- Breathing is jerky; vomiting, involuntary micturition or defecation may occur.
- Heart rate and BP may rise and pupils dilate due to sympathetic stimulation.
- No stimulus or operative procedure carried out during this stage.
- Breatholding are commonly seen. Potentially dangerous responses can occur during this stage including vomiting, laryngospasm and uncontrolled movement.
- **This stage is not found with modern anaesthesia – preanaesthetic medication, rapid induction etc.**

Stage III: Stage of Surgical anaesthesia

Extends from onset of regular respiration to cessation of spontaneous breathing. This has been divided into 4 planes:

- **Plane 1:** Roving eye balls. This plane ends when eyes become fixed.
- **Plane 2:** Loss of corneal and laryngeal reflexes.
- **Plane 3:** Pupil starts dilating and light reflex is lost.
- **Plane 4:** Intercostal paralysis, shallow abdominal respiration, dilated pupil.

Stage IV: Medullary / respiratory paralysis

- Cessation of breathing — failure of circulation
  death
- Pupils: widely dilated
- Muscles are totally flabby
- Pulse is imperceptible
- BP is very low.

GENERAL ANAESTHETIC TECHNIQUES

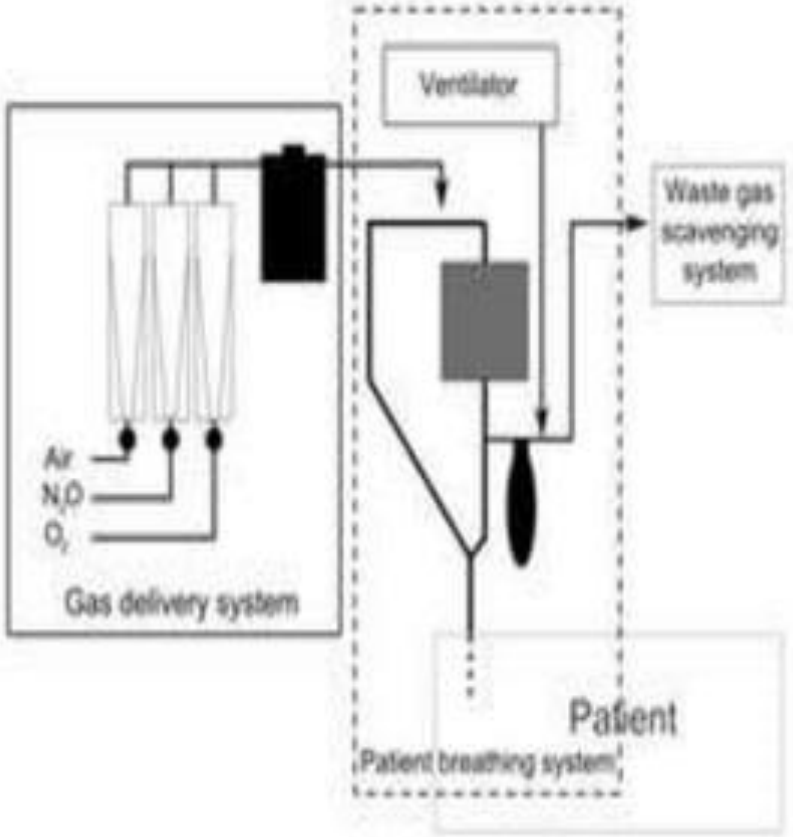
A. INHALATION

B. INJECTION

A. Inhalation :

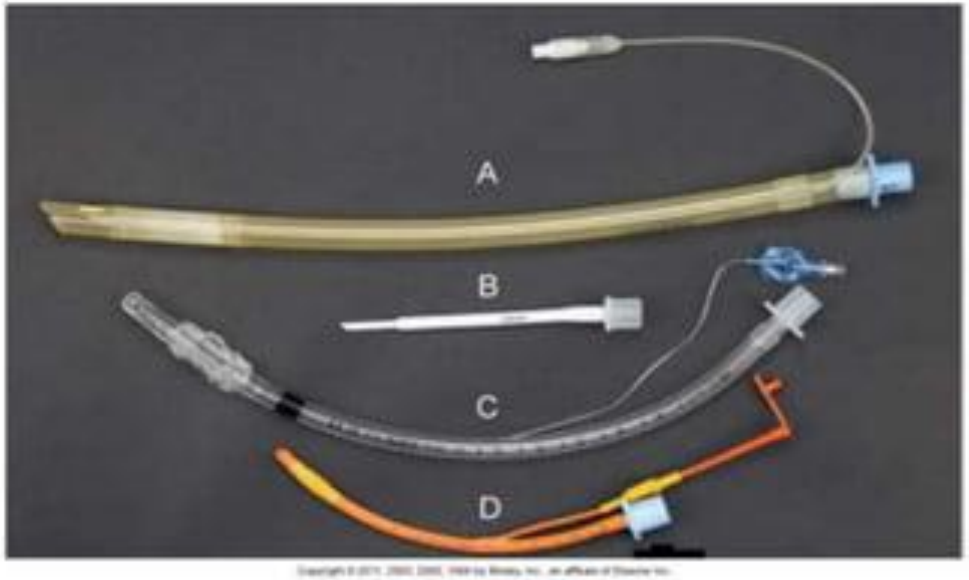
1. Anaesthesia machine :

An anaesthesia machine allows composing a mixture of oxygen,anaesthetics & ambient air,delivering it to the patient & machine parameters.



3. Laryngeal mask airway.
4. Tracheal tube connected to some type of anaesthetic vaporiser & an anaesthetic delivery system.

- Murphy tubes (A, C,D)
  - Beveled end and side holes
  - Possible cuff
    - A. silicone
    - C. PVC
    - D. Red rubber
- Cole tubes (B)
  - No side hole or cuff
  - Abrupt decrease in diameter of the tube
  - Used in birds and reptiles



5. Mask induction suited for critical patients.

   Caution:Prevention anaesthetic gas pollution of room use tight-fitting mask risk of stressing patient use pre-anaesthetic sedation may be dangerous with animals with poor respiratory function.

6. Gases or vapors which produce general anaesthesia by inhalation are stored in gas cylinders & administered using **flowmeters**.

B. INJECTION :

- Injectable anaesthetics are used for the induction & maintainance of a state of unconsciousness.
- Anaesthetics prefer to use intravenous injections , as they are faster , less painful & more reliable than intramuscular or subcutaneous injections.
- Standard dose is calculated , drawn into syringe injected as needed directly into vein.

CLASSIFICATION OF GENERAL ANAESTHETICS :

- Intravenous Anaesthesia
- Inhalation Anaesthesia

Intravenous Anaesthesia :

1. **Barbiturates :**
   - Phenobarbital (20-30 mg/kg b.wt.)
   - Pentobarbitone (6-8mg/kg b.wt.)
   - Thiopental
   - Methohexitone etc

2. **Non barbiturates :**
   - Chloral hydrate
   - Propofol (4-6mg/kg b.wt.)

3. **Dissociative anaesthetics:**
   - Ketamine (10mg/kg b.wt.)
   - Tiletamine (6.6-13.2mg/ke b.wt.)

4. **Neuroleptanalgesia :**
   - Fentanyl + Droperidol
   - (Analgesic) (Neuroleptic)

5. **Benzodiazepenes :**
   - Diazepam
   - Lorazepam
   - Midazolam

Inhalation anaesthesia :

- ***Gases***:

  N_2O,Cyclopropane,Xenon

- ***Liquids***:

  Ether, Halothane, Enflurane, Desflurane, Isoflurane, Sevoflurane, Methoxyflurane