



Round : Anesthesia - Lecture 6

Group no : B 3

Done By : Johainah Taha

IV Drugs of Anesthesia

* Revision:

- Triad Effect: ① Hypnosis ② muscle relaxant ③ Analgesia.

- Cerebral $\begin{cases} \rightarrow \text{Vasodilation} \rightarrow \uparrow \text{ICP} \\ \rightarrow \text{Vasoconstriction} \rightarrow \downarrow \text{ICP} \end{cases}$

- The inhalational agents lead to $\rightarrow \text{Vasodilation} \rightarrow$ 1. hypotension 2. $\downarrow$ vascular resistance 3. $\uparrow$ ICP

- Revise Halothane Side effects on CVS.

- We use IV drug in induction and maintenance when having malignant hyperthermia.

- We use gases in induction and maintenance in Pediatrics.

#1) Propofol :-

- MOA :- enhance GABA $\rightarrow$ CNS depression

- Effect :- Rapid onset + Short duration + it $\downarrow$ ICP by cerebral vasoconstriction.

- Advantages (why is it the first drug of choice) ??

1. rapid onset
2. short duration
3. Anti-emetic (it treats N/V)
4. anti-pyretic
5. Bronchodilator (2nd drug of choice for Asthma after ketamine)
6. doesn't cause Hand Over syndrome

- USES :- 1. induction 2. maintenance 3. Short procedure 4. Ambulatory Surgery

5. ICU patient (it depresses RS by preventing airway reflexes) 6. Day Case Surgery.

- Side Effects :- 1. Can lead to hyperlipidemia

2. Respiratory depression (Apnea + no airway reflexes)

3. CVS (Bradycardia + Hypotension)

4. Pain to vein on injection.

- it has 3 components $\rightarrow$ زيوت + زيت + بيفن = سكا (سكا الزيت) $\rightarrow$ Can lead to Sepsis

** Propofol Infusion Syndrome **

- rare, serious condition, associated with prolonged high doses of propofol

- usually in ICU patients.

- Severe Complications :- 1. metabolic acidosis 2. Cardiac failure 3. Rhabdomyolysis 4. kidney failure

#2) Etomidate - (Stabilizer)

- MoA: enhance GABA → Suppress CNS.

- Effect: 1. Minimal or Zero effect on CVS+RS. 2. ↓ ICP by cerebral vasoconstriction
3. Rapid (highly lipid soluble)

- S.E: 1. myoclonus 2. adrenal suppression → inhibit 11β-hydroxylase enzyme
3. Severe Nausea + Vomiting → Contraindicated in Addison.

*** It is good for hemodynamically unstable patient ***
if a patient has multiple trauma and the head is involved, use Etomidate
and if the head isn't involved, use Ketamine

#3) Ketamine :-

- MoA: NMDA antagonist.

- Effect: 1. Rapid onset (↑ lipid soluble) 2. high distribution 3. ↑ ICP (by cerebral vasodilation)
4. Bronchodilation 5. Provide analgesia 6. ↑ BP/HR 7. ↑ Cardiac Load
8. Cause tachycardia 9. Hallucinations 10. ↑ Intraocular Pressure
11. zero effect on RS 12. Potent sympathetic stimulator → Bronchodilation

- Uses: 1. Asthma (the drug of choice #1 → ketamine #2 → propofol)
2. War Zones → Cause they have hypovolemic shock due to bleeding
3. Short procedure → good anesthetic effect
→ zero RS effect, so there is no need for intubation.

- Contraindications: 1. Glaucoma 2. hemorrhagic shock
3. initial cardiac reverse ischemia, Malignant HTN, cardiogenic shock

★ ملاحظات مهمة :-

Propofol
- اجاك مريض مع asthma و hydroceph → induction
- بالنسبة لـ Contraindication لـ Ketamine: لو الدكتور حكي Shock هو فمين
→ ischemic → ketamine استعمل
→ Hemorrhagic → ketamine استعمل
ولو الدكتور جاب بالأمكان Shock لوحدها ما يعتبرها Contraindication.

#4) Barbiturates (Thiopental)

- an alkaline solution (pH 10) → no bacterial growth

- MOA: enhance GABA → CNS depression.

- effects: 1. Rapid induction and short duration.

2. ↓ ICP by cerebral vasoconstriction.

3. precipitate porphyria. (contraindicated in Porphyria)

- Uses: 1. Short procedures 2. Status epilepticus **

- S/E: 1. RS depression → Apnea + Blunt airway reflexes (these are the reflexes that prevent aspiration, that's why we do ^①ventilation + ^②sewing the airway.)
2. has narrow therapeutic effect (effective dose close to toxic dose) → not used in ICU

3. Enzyme inducer

4. Pain to artery (irritation → spasm → ischemia → ^①Pain → ^②gangrene)

5. CNS → Hypotension + Tachycardia.

Thiopental, an anesthetic, can cause tissue necrosis and gangrene if injected outside the vein or into an artery due to its high pH and ability to cause vasoconstriction. Symptoms of improper administration include pain, skin blanching, and discoloration, progressing to necrosis if untreated. Prevention involves confirming IV placement before injection. If extravasation occurs, immediate interventions include saline injection, vasodilators, warm compresses, and limb elevation. Severe cases may require surgical intervention.

#5) Benzodiazepine (Midazolam)

- MOA: enhance GABA → CNS depression.

- rapid onset + short duration of action. (↑ lipid soluble)

- Effects: sedation + amnesia + muscle relaxation + ↓ ICP (cerebral vasoconstriction)

- USES: 1. Induction 2. Anti-anxiety 3. anti-convulsion **

- S/E: (like Barbiturate, but weaker) 1. Respiratory depression 2. hypotension with high doses.

* Note: no analgesic effect.

#6) Opioids:

- Fentanyl → main use → analgesia
↳ Causes Chest Rigidity
↳ Antidote: Naloxone

السؤال جيڪو ڏنو ويو آهي ته Chest rigidity جو علاج ڇا آهي؟
Opioids ڏيڻ بعد جيڪو muscle relaxant ڏيڻو آهي؟
Naloxone
الجواب: Naloxone