SNS COLLEGE OF ALLIED HEALTH SCIENCE

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT OF OPERATION THEATRE AND ANAESTHESIA TECHNOLOGY - II YEAR

COURSE NAME: PHARMACOLOGY

TOPIC - OBSTETRICS

MRS.GAYATHIRI.K
Lecturer

Introduction to Uterotonics in Obstetrics

- Uterotonics: Drugs that promote uterine contractions, essential for labor induction, augmentation, and preventing postpartum hemorrhage (PPH).

- Focus: Oxytocin and Methergin (Methylergometrine).

Oxytocin: Definition and Class

- Definition: Peptide hormone naturally released by the posterior pituitary gland, used synthetically to induce/augment uterine contractions and control postpartum bleeding.
- Class: Uterotonic (Oxytocic agent); Posterior pituitary hormone analog.

Oxytocin: Drug Names and Mechanism

- Drug Names:
  - Generic: Oxytocin
  - Brands: Pitocin, Syntocinon
- Mechanism: Activates G-protein-coupled receptors on uterine smooth muscle cells, increasing intracellular calcium and sodium permeability, leading to enhanced uterine contractions.

Oxytocin: Pharmacokinetics

Aspect	Details
Onset	IV: Immediate; IM: 3–5 minutes; Intranasal: 5–10 minutes
Duration	IV: ~ 1 hour after infusion stop; IM: 30–60 minutes
Dosage	Labor induction: IV infusion 0.5–1 mU/min, increase 1–2 mU/min every 15–60 min. PPH: 10–40 units in 1L IV fluid.

Oxytocin: Pharmacodynamics

- Pharmacodynamics: Stimulates rhythmic uterine contractions, mimicking endogenous oxytocin; promotes milk ejection in breastfeeding.
- Metabolism: Rapidly degraded by oxytocinase in liver and kidneys.
- Excretion: Small amounts excreted unchanged in urine.

Oxytocin

- Adverse Effects: Hypertension, water intoxication (hyponatremia), nausea/vomiting, arrhythmias, anaphylaxis, uterine rupture (if overused).
- Contraindications: Cephalopelvic disproportion, fetal distress, prior uterine surgery (e.g., C-section, relative), hypersensitivity.

Oxytocin

- Indications:

Induction/augmentation of labor

control of postpartum hemorrhage

management of incomplete/missed abortion.

- Interactions:

Sympathomimetics (e.g., ephedrine) — severe hypertension

Cyclopropane anesthesia — hypotension

Prostaglandins — enhanced effects.

Methergin

- Definition: Methergin (Methylergometrine) is a semi-synthetic ergot alkaloid that promotes uterine contractions to prevent/control bleeding after childbirth.
- Class: Ergot alkaloid; Uterotonic agent.

Methergin

- Drug Names:
  - Generic: Methylergometrine
    (or Methylergonovine)
  - Brands: Methergine, Ergonovine Maleate

- Mechanism: Directly stimulates uterine smooth muscle, increasing tone, rate, and amplitude of contractions via alpha-adrenergic and serotonin receptor activation.

Methergin: Pharmacokinetics

Onset	IV: Immediate; IM: 5–10 minutes; Oral: 5–15 minutes
Duration	IV: 45 minutes; IM/Oral: ~ 3 hours
Dosage	0.2 mg IV/IM every 2–4 hours (acute); Oral: 0.2 mg every 4–6 hours for 2–7 days.

Methergin

- Pharmacodynamics: Enhances uterine contractility at low doses; causes vasoconstriction at higher doses.
- Metabolism: Hepatic
- Excretion: Mainly biliary; some urinary.
- Adverse Effects: Hypertension, nausea/vomiting, headache, chest pain, dyspnea, seizures (rare).
- Contraindications: Hypertension, preeclampsia/eclampsia, cardiovascular disease, pregnancy before placental delivery, hypersensitivity.

Methergin: Indications and Interactions

- Indications: Prevention/control of postpartum hemorrhage due to uterine atony; adjunct in abortion management.
- Interactions: CYP3A4 inhibitors (e.g., ketoconazole) — increased levels/toxicity; Beta-blockers — severe hypertension; Nitroglycerin — antagonism.


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