SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT : CARDIO PULMONARY PERFUSION CARE TECHNOLOGY

COURSE NAME : PHARMACOLOGY

UNIT : INOTROPES

TOPICS : DEFINITION, TYPES, MECHANISM OF ACTION, PHARMACODYNAMICS, PHARMACOKINETICS, INDICATIONS, CONTRAINDICATIONS, SIDE EFFECTS

INOTROPES

- Inotropes are medications that affect the force and strength of the heart's contractions.

- They are used to manage various cardiac conditions by altering the myocardial contractility.

TYPES OF INOTROPES

- **Positive Inotropes:** Increase the force of heart muscle contractions.
  Examples: Dobutamine, Dopamine, Digoxin.

- **Negative Inotropes:** Decrease the force of heart muscle contractions.
  Examples: Beta-blockers, certain Calcium Channel Blockers.

MECHANISM OF ACTION

- Positive inotropes usually act by stimulating receptors in the heart, increasing calcium influx, which enhances contraction strength.

- Negative inotropes often work by blocking receptors or channels, reducing the intracellular calcium, thereby weakening contractions.

PHARMACODYNAMICS

- Influences ion concentrations (especially calcium) in cardiac cells, affecting contractility.

- Alters the function of receptors or channels in the heart muscle.

PHARMACOKINETICS

- Varies for each medication; typically administered intravenously or orally.
- Absorption, distribution, metabolism, and elimination differ among ionotropes.

INDICATIONS

- Heart Failure: Positive inotropes can help temporarily support heart function.
- Shock: Used to enhance cardiac output in certain types of shock.
- Arrhythmias: Some ionotropes assist in controlling irregular heart rhythms

CONTRAINDICATIONS

- Individual drug-specific contraindications exist.
- For instance, some ionotropes are contraindicated in specific heart conditions or in patients with known allergies to these medications.

SIDE EFFECTS

- Positive Inotropes: May lead to increased heart rate, arrhythmias, high blood pressure, and myocardial oxygen consumption.

- Negative Inotropes: Can cause decreased heart rate, fatigue, dizziness, and potential exacerbation of heart failure symptoms.

TECHNICIAN ROLE

- Vital Signs Monitoring: Regularly check blood pressure, heart rate, and rhythm to detect any changes or adverse effects.
- Assessment of Symptoms: Monitor for signs of worsening heart failure, arrhythmias, or other adverse reactions.
- Fluid Balance: Evaluate fluid status and signs of fluid overload or dehydration.

ASSESSMENT

- What all are the Types of Inotropes ?
- What is the Pharmacokinetics of Inotropes ?