Objectives

- Based on the study findings presented, outline the mechanisms of action, indications for clinical use, dosages, limitations and adverse effects of the inotropes, vasopressors and alternative agents commonly used in neonatal cardiovascular stabilization.
- Describe the historic and ongoing evolution of the pathophysiologic process leading to the development of retinopathy of prematurity (ROP) including the role of oxygen and the association of any specific drug therapies with an increased incidence of ROP.
- Identify the current pharmacologic interventions investigated as possible approaches to the prevention and/or treatment of retinopathy of prematurity (ROP) including any limitations or contraindications to use of a specific intervention.
- Summarize the pharmacologic approaches under investigation as adjuncts to therapeutic hypothermia for use in addressing the pathophysiologic processes initiated by perinatal hypoxia-ischemia injury.

Content Outline

1. Recognition and Management of Hemodynamic Instability in the Neonate
   1.1 Mechanisms of action and inotrope dosages used in neonates
   1.2 Benefits and limitations of inotropes and adjunct or alternative drugs used for specific disorders

2. Pharmacologic Approaches to Prevention and Treatment of Retinopathy of Prematurity (ROP)
   2.1 Description of ROP and underlying pathophysiology
      2.1.1 Role of oxygen
   2.2 Specific pharmacologic interventions
      2.2.1 Antioxidants
      2.2.2 Cyclooxygenase inhibitors
      2.2.3 Inositol, propranolol, caffeine
      2.2.4 Angiogenic factors
      2.2.5 VEGF inhibitors & insulin-like growth factor (IGF)-1
      2.2.6 Polyunsaturated fatty acids (PUFAs)
   2.3 Drugs associated with the incidence of ROP

3. Pharmacologic Neuroprotective Adjuncts to Hypothermia Therapy for Perinatal Hypoxia-Ischemia
   3.1 Overview of destructive pathways initiated by perinatal hypoxia-ischemia
   3.2 Pharmacologic neuroprotective interventions used as adjuncts to therapeutic hypothermia
      3.2.1 Antenatal neuroprotection
      3.2.2 Early postnatal period
      3.2.3 Anti-inflammatory & anti-apoptotic therapy
      3.2.4 Therapies to address downregulation of neurotrophic & growth factors

Reading Material Resources

Module WB1836: Neonatal Drug Therapies- Current Evidence is based on the resources listed below. A copy of the resources are included with the module.

Inotrope and vasopressor support in neonates, Ruoss JL, McPherson C and DiNardo J, NeoReviews, 16(6), 2015, pp. e351-361


Drugs for neuroprotection after birth asphyxia: Pharmacologic adjuncts to hypothermia, van Bel F, Groenendaal F, Seminars in Perinatology, 40, 2016, pp. 152-159