Normal and Abnormal Neonatal Transition to Extrauterine Life

Content Outline

1. Normal Neonatal Transition to Extrauterine Life
   1.1 Fetal Circulation
   1.2 Endocrine Adaptations to Birth
      1.2.1 Cortisol
      1.2.2 Catecholamines
      1.2.3 Thyroid hormones
   1.3 Metabolic Adaptations
      1.3.1 Energy metabolism
      1.3.2 Thermoregulation
   1.4 Cardiovascular Adaptations
   1.5 Lung adaptations
      1.5.1 Fetal lung fluid
      1.5.2 Surfactant

2. Factors that Adversely Neonatal Transition
   2.1 Mode and timing of delivery
   2.2 Antenatal glucocorticoids
   2.3 Early vs. delayed cord clamping
   2.4 Temperature
   2.5 Asphyxia
   2.6 Oxygen during resuscitation

3. Hypoxemic Respiratory Failure
   3.1 Pulmonary circulatory changes
   3.2 Causes
      3.2.1 Persistent pulmonary hypertension of the newborn
      3.2.2 Congenital diaphragmatic hernia
      3.2.3 Meconium aspiration syndrome
      3.2.4 Transient tachypnea of the newborn
      3.2.5 Air leak syndromes
   3.3 Therapy Effects
      3.3.1 Mechanical ventilation
      3.3.2 Oxygen
      3.3.3 Acidosis/alkalosis
      3.3.4 Surfactant
      3.3.5 Inhaled nitric oxide
      3.3.6 Inotropes
      3.3.7 Partial liquid ventilation
      3.3.8 ECMO

Objectives

- Review endocrine, metabolic, cardiovascular and lung adaptive processes of neonatal transition to extrauterine life
- Discuss the role of cortisol and catecholamines in successful neonatal transition
- Describe the processes of fetal circulation
- Summarize pulmonary circulatory changes in hypoxemic respiratory failure
- Provide an overview of how therapies for respiratory failure cause pulmonary hemodynamic changes
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Reading Material Resources

Module WB1505: Normal and Abnormal Neonatal Transition to Extrauterine Life is based on the resources listed below. A copy of each article is included with the module.


“Physiology of Transition from Intrauterine To Extrauterine Life”, Hillman, et al., Clinics in Perinatology, 39, 2012, pp. 769-783