Idiopathic (Infant) Respiratory Distress Syndrome
IRDS

Also Called:
• neonatal respiratory distress syndrome
• respiratory distress syndrome of newborn
• hyaline membrane disease

Pathophysiology
• Surfactant deficiency or abnormality
• Pulmonary hypoperfusion due to hypoxia ➔ PPHN
Etiology

- Predisposed in:
  - Cesarean birth
  - Diabetic mother
  - Maternal bleeding
  - Premature birth
  - Prenatal asphyxia
  - Prolonged labor or Rapid labor
  - Second-born twin or sibling with IRDS
  - caucasian males
\[ \text{↓Pulmonary surfactant} \]

- \[ \text{↓Lung metabolism} \]
  - \[ \text{↓Lung ischemia} \]
    - \[ \text{↑Lung hypoperfusion} \]
      - \[ \text{Blood bypasses lungs via fetal pathways} \]
        - \[ \text{Reflex pulmonary vasoconstriction} \]
          - \[ \text{↓Alveolar oxygen tension} \]

- \[ \text{Atelectasis} \]
  - \[ \text{↓Lung compliance} \]
    - \[ \text{↓Alveolar ventilation} \]
Presentation

- Clinical signs of respiratory distress
- ABG’s show hypoxemia, hypercapnia and respiratory acidosis
- Symptoms within the first 8 hours of life
- Peak usually by third day
- “ground glass” appearance of the CXR
Management

- Antenatal glucocorticoids (steroids)
- Surfactant replacement therapy
- Empiric antibiotic therapy
- Thermoregulation

- Avoid hypoxemia and acidosis
  - $\text{PaO}_2$ 50-70mmHg
- Optimize fluid management
- Reduce metabolic demands
- Minimize lung injury
  - CPAP
  - Vt 4-5ml/kg
  - PEEP
Surfactant function
Exogenous surfactant

Without surfactant

45 Minutes posttreatment

Endotracheal tube
Atelectatic lung
Liver
Stomach
Lung
Heart

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