

**& Neonatal respiratory distress syndrome (NRDS) is represented by any breathing difficulty that occurs before the 28<sup>th</sup> day of life.**

## **Respiratory Distress Syndrome**

**Also called as hyaline membrane disease,**

**❖ occur in the infants with the lowest birth weight (<2kg);**

- ❖ **50% of the infants born between 29 and 31 weeks;**
- ❖ **the major cause is surfactant deficiency.**

Common etiologies of respiratory distress during the neonatal period, divided by pulmonary and non-pulmonary causes

## **ETIOLOGY**

## **AND PATHOPHYSIOLOGY**

- **Surfactant deficiency is the 1<sup>st</sup> cause of RDS.**
- **Low levels of surfactant cause high surface tension.**
- **High surface tension makes it hard to expand the alveoli.**
- **Tendency of affected lungs to**

**become atelectasis at end-expiration when alveolar pressures are too low to maintain alveoli in expansion.**

- **Leads to failure to attain an adequate lung inflation and therefore reduced gaseous exchange.**

## **The pathogenesis of RDS**

### **Pulmonary Function Changes During RDS**

**Chest X-ray:**

### **Transient Tachypnea of Newborn**

# **What is a surfactant?**

- The surfactant is a substance present in the liquid from the surface of the alveoli and it is 90% made of lipoproteins and phospholipids which have a role in decreasing tension.
- **Reduce tension and maintains alveoli relaxed during the respiratory cycle (anti-atelectatic action),**
- **Reduce the effort fan,**
- **Increase pulmonary compliance,**
- **Anti-edematous action,**
- **Anti-infection defense.**

## **ANATOMIC**

# **PATHOLOGY**

**Microscopic visualizes acidophiles hyaline membranes that line the alveoli, alveolar ducts and terminal bronchioles, atelectatic areas stretched up to hemorrhage intra-alveolar vascular congestion and dilated lymphatic vessels.**

## **Clinical Manifestations**

- **Clinical manifestations appear within the first minutes after birth,**
- **Tachypnea (>60 breaths/min), nasal flaring, subcostal and intercostal retractions, cyanosis & expiratory grunting,**

**Classic Signs of Respiratory Distress Syndrome**

## **HMD – Lungs**

# **Auscultation**

- ❖ **Absent or diminished breath sounds**

- ❖ **Bilateral crackles heard**

**Silverman Score**

**Initial Studies for the Infant  
with Respiratory Disease  
during the Neonatal  
Period**

## **MHD - Diagnostic**

**The history of risk factors**

**Clinical examination**

**Laboratory exams**

## **Radiological examination**

### **Evolution**

## **HMD – Prevention**

**Intratracheal instillation of a surfactant (Curosurf, Survanta) should be made immediately after birth to premature infants at high risk of developing RDS.**

## **HMD – Treatment**

### **Etiologic**

**Etiologic - administration of exogenous surfactant natural or synthetic.**

**It can be used for prophylactic purpose in the delivery room; after 12h it can be**

**repeated.**

# **HMD - Complications**

## **❖ PRECOCIOUS**

- Infections**
- Intraventricular hemorrhage**
- Ductus arteriosus**
- Pneumothorax**

# **HMD – evolution and prognostic**

**Despite the preventive measures and treatment - mortality remains at a high level of 10-80%.**