

GOOD MANAGEMENT OF RESPIRATORY DISTRESS SYNDROME IN NEWBORNS

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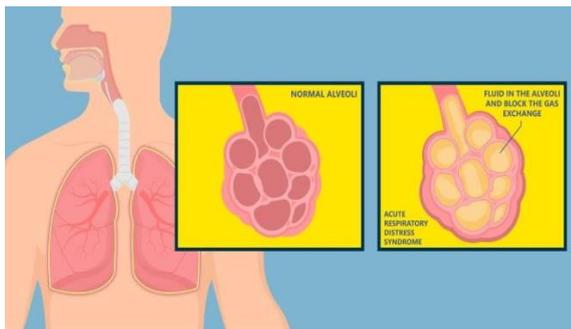
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INTRODUCTION

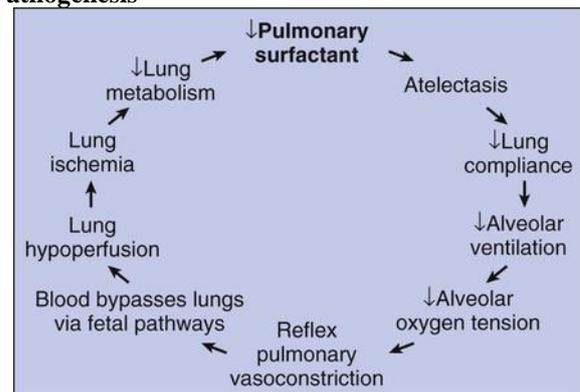
Pediatric respiratory distress syndrome is a breathing disorder, mainly pulmonary edema that happens to premature newborns when they lack enough surfactant to coat the alveoli (air sacs) in the lungs. Surfactant is a substance that coats the alveoli to keep the air sacs open so newborns can breathe in oxygen. Without enough surfactant, the alveoli remain closed and the baby's lungs collapse. If left untreated, pediatric respiratory distress syndrome can cause brain damage, organ damage or death. It occurs commonly in premature babies, where the lung.

In the United States in 2019, the infant mortality rate due to respiratory distress syndrome (RDS) was 11.5 per 100,000 live births.



➤ Underweight babies

Pathogenesis



EPIDEMIOLOGY

In the United States, respiratory distress syndrome has been estimated to occur in 20,000-30,000 newborn infants each year and is a complication in about 1% pregnancies.

In India Children with ARDS comprised 7.8% of total admissions. Nearly a third each of patients had mild (29%), moderate (36%), and severe (35%) ARDS. Direct lung injury due to pneumonia was observed in 59 children (66%) including 3 children with accidental paraquat ingestion and 2 with SARS-2-COVID pneumonia.

RISK FACTORS

- RDS in siblings
- Multiple births
- C-section delivery
- Mother has diabetes
- Infection
- Cold, stress, or hypothermia.
- White or male babies
- Perinatal asphyxia
- Babies with patent ductus arteriosus

SYMPTOMS

- Dyspnea
- Tachypnea
- Grunting sound
- Cyanosis
- Widening of the nostrils with each breath
- Chest retractions
- Respiratory difficulty at birth that gets progressively worse
- Rapid, shallow breathing.
- Hypoxia
- Hypercapnia
- The symptoms usually peak by the third day, and may resolve quickly when the baby begins to micturate.

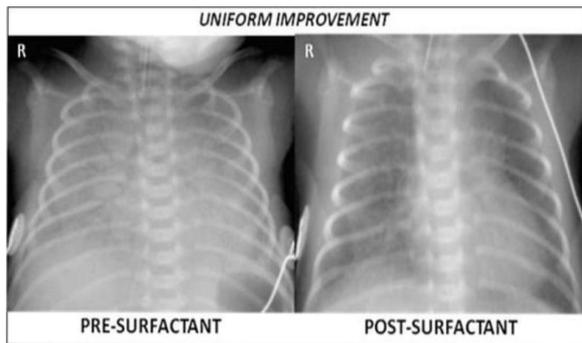
DIAGNOSIS

Baby's appearance, color, and breathing efforts.

Chest X-rays Bilateral opacities

X- rays ma

Blood test to check any infection



Arterial blood gas

- O₂
- Co₂
- PH

Echocardiography

- ❖ It looks at the structure of the heart and how it is working.
- ❖ It is also used to rule out PDA

MANAGEMENT

- **Oxygen therapy**
- According to Berlin's definition, ARDS can be divided into mild, moderate and severe types,
- Mild – PaO₂ /FIO₂ <300 with PEEP > 5 cm h₂o
- Moderate – PaO₂/FIO₂ - 100-200 with PEEP > 10 cm h₂o
- Severe – PaO₂/FIO₂ < 100 mmhg with PEEP. > 15 cm h₂o (PEEP – positive end expiratory pressure) (CPAP- continuous positive airway pressure)

Nasal cannula

- Continuous Positive Airway Pressure (CPAP): it pushes the air or oxygen into the lungs to keep the air sacs open.
- Ventilator: this is for severe ARDS. This is a machine that helps the infant breathe when they cannot breathe well. A breathing tube is put down the infant's windpipe. The infant is then placed on the ventilator to help them breathe.
- Non invasive positive pressure ventilation.

High frequency oscillatory ventilation – High frequency oscillatory ventilation (HFOV) is a type of mechanical ventilation that uses a constant distending pressure (mean airway pressure [MAP]) with pressure variations oscillating around the MAP at very high rates (up to 900 cycles per minute). Surfactant can be given into the baby's lungs to replace what they do not have. This is given directly down the breathing tube that was placed in the windpipe. Surfactant replacement with artificial surfactant. This is most effective if started in the first six hours of birth. Surfactant replacement has been shown to reduce the severity of RDS. Surfactant is given as prophylactic treatment for some babies at very high

risk for RDS. For others it is used as a "rescue" method. The drug comes as a powder to be mixed with sterile water and then is given through the ET tube.

Inhaled NO- Inhaled nitric oxide (iNO) is a selective pulmonary vasodilator in improving V/Q matching and has been shown to improve oxygenation; however, there is no strong evidence to support a reduction in mortality.

Intravenous (IV) catheter treatments – It is placed into one or two of the blood vessels in the umbilical cord. It is used to give IV fluids, nutrition and medicines. It is also used to take blood samples.

Continuous distending pressure (either positive or negative).

Medicines

- Macrolides – azithromycin, clarithromycin, roxithromycin
- tetracycline

Prone position -Prone positioning helps to improve oxygenation in patient with ARDS by recruitment of collapsed alveoli of the dorsal lung regions, hence improving the ventilation and ventilation/perfusion matching.

Take care during management

- The nasal tube can get wrapped around a child's neck can lead to choking (strangulation) or death.
- Do not leave the medical device tubing where infants or children can get tangled up in it.

CONCLUSION

So by the way Pediatric RDS is an emergency condition. We can able to prevent RDS by Preventinga preterm birth is the primary means of preventing RDS. When a preterm birth cannot be prevented, giving the mother medications called corticosteroids before delivery has been shown to dramatically lower the risk and severity of RDS in the baby. These steroids are often given to women between 24 and 34 weeks gestation who are at risk of early delivery. However, if the delivery is very quick or unexpected, there may not be time to give the steroids, or they may not have a chance to begin working. If the plan A is not possible then go for plan B which is given artificial ventilation, surfactant to the infant with care... Thank you.

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