

RESPIRATORY DISTRESS IN NEWBORN

FEATURES

- Tachypnea – respiratory rate $> 60/\text{min}$
- Chest retractions
- Grunting
- Flaring of ala nasi
- Cyanosis

CAUSES

MEDICAL

Pulmonary

- Respiratory distress syndrome
- Meconium aspiration syndrome
- Pneumonia
- Transient tachypnea of newborn
- Persistent pulmonary hypertension
- Pneumothorax

NON PULMONARY CAUSES

Cardiac

congenital heart disease, congestive heart failure

Metabolic

Hypothermia, hypoglycaemia, metabolic acidosis

CNS

Asphyxia, cerebral oedema, haemorrhage

Chest wall

Asphyxiating thoracic dystrophy, Werdnig-Hoffman disease

SURGICAL

- **Trache-oesophagal fistula**
- **Diaphragmatic hernia**
- **Lobar emphysema**
- **Choanal atresia**

APPROACH TO RESPIRATORY DISTRESS

HISTORY

- Onset of distress
- Gestation
- Antenatal steroids
- Predisposing factors – PROM, fever
- Meconium stained amniotic fluid
- Asphyxia

EXAMINATION

- **Severity of respiratory distress**
- **Neurological status**
- **Blood pressure**
- **Hepatomegaly**
- **Cyanosis**
- **Features of sepsis**
- **Malformations**

CHEST EXAMINATION

- Air entry
- Mediastinal shift
- Adventitious sounds
- Hyperinflation
- Heart sounds

ASSESSMENT OF RESPIRATORY DISTRESS

newbornwhocc.org

Assessment of respiratory distress

Score *	0	1	2
Resp. rate	<60	60-80	>80
Central cyanosis	None	None with 40% FiO ₂	Needs >40% FiO ₂
Retractions	None	Mild	Severe
Grunting	None	Minimal	Obvious
Air entry	Good	Decreased	Very poor

* Score > 6 indicates severe distress

PRE-TERM POSSIBLE ETIOLOGY

EARLY PROGRESSIVE	RESPIRATORY DISTRESS SYNDROME
EARLY TRANSIENT	ASPHYXIA, METABOLIC CAUSES, HYPOTHERMIA
ANYTIME	PNEUMONIA

TERM – POSSIBLE ETIOLOGY

EARLY WELL LOOKING	TTNB, POLYCYTHEMIA
EARLY SEVERE DISTRESS	MAS, ASPHYXIA, MALFORMATIONS
LATE SICK WITH HEPATOMEGALY	CARDIAC
LATE SICK WITH SHOCK	ACIDOSIS
ANYTIME	PNEUMONIA

SUSPECT SURGICAL CAUSE

- **Scaphoid abdomen**
- **Frothing**
- **History of aspiration**

INVESTIGATION

- Chest X-ray
- Polymorph count
- Gastric aspirate
- Sepsis screen
- Blood gas analysis

MANAGEMENT

- **Monitoring**
- **Supportive**
 - **IV fluids**
 - **Maintain vital signs**
 - **Oxygen therapy**
 - **Respiratory support**
- **Specific**

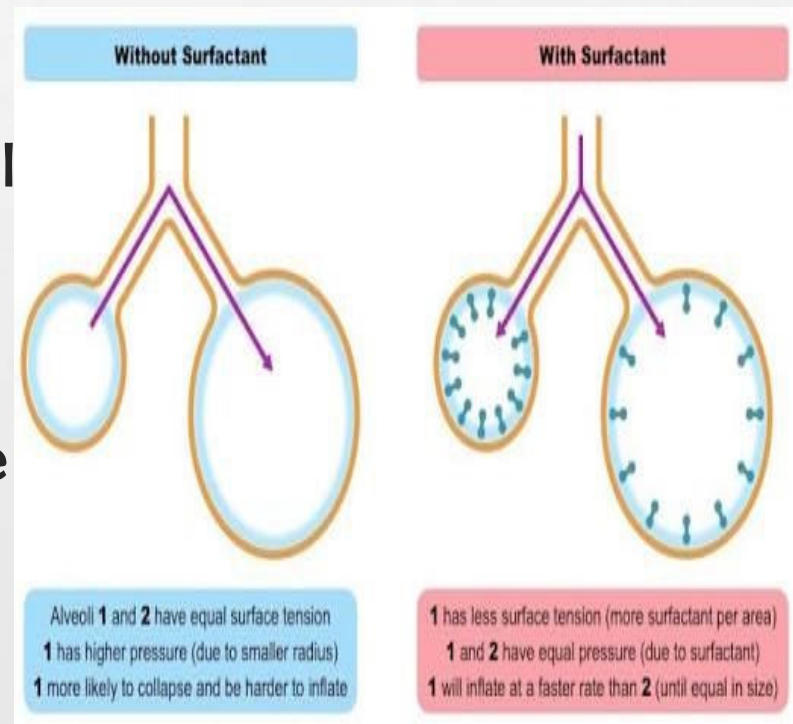
RESPIRATORY DISTRESS SYNDROME \ HYALINE MEMBRANE DISEASE

RISK FACTORS

- **PREMATURITY**
 - **Common in preterm babies less than 34 weeks of gestation**
 - **80% neonates < 28 weeks**
- **Maternal diabetes**
- **Asphyxia**
- **Acidosis**

ETIOPATHOGENESIS

- Decreased or abnormal surfactant
- Alveolar collapse
- Impaired gas exchange
- Respiratory failure



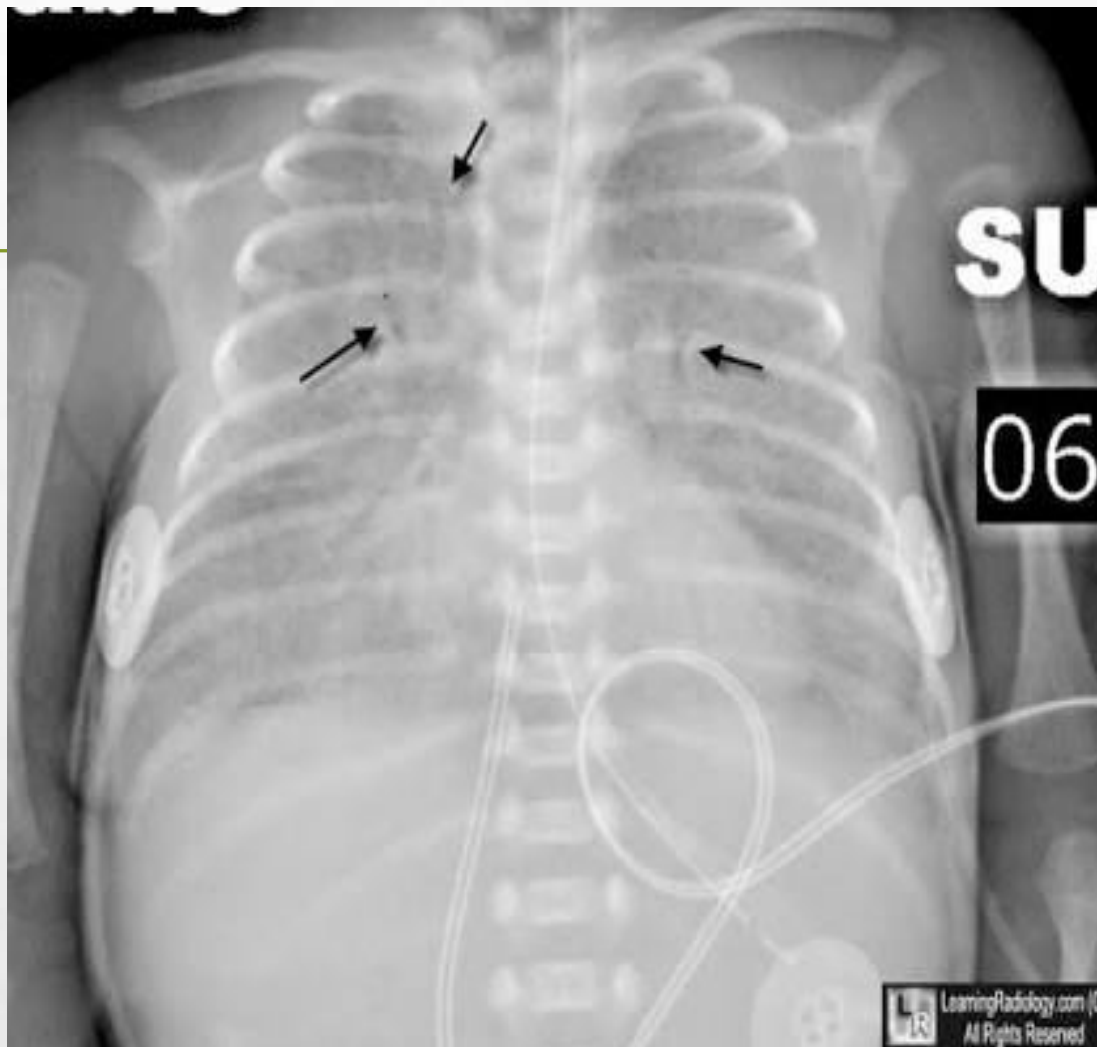
CLINICAL FEATURES

- Usually within minutes of birth
- Tachypnea
- Retractions
- Grunting
- Cyanosis
- Breath sounds normal or diminished

DIAGNOSIS

CHEST X-RAY

- Reticogranular pattern
- Ground-glass opacity
- Low lung volume
- Air bronchogram
- White out ling in severe disease



MANAGEMENT

- Cared in NICU with IV fluids and oxygen.
- Continuous positive airway pressure (CPAP).
- Mechanical ventilation.
- Exogenous surfactant – intratracheal.

DOSE: 100mg/ kg

CPAP

It is non invasive modality where continuous distending pressure (5-7 cm of water) applied at nostril level to keep the alveoli open in a spontaneously breathing baby

Minimises lung injury, air leak and sepsis.

PREVENTION-

ANTENATAL STEROIDS

To mother in preterm labour (<35 weeks).

DOSE: Inj. Betamethasone 12mg IM every 24hrs- 2 doses OR Dexamethasone 6mg IM every 12 hrs.- 4 doses.

MECONIUM ASPIRATION SYNDROME

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- Meconium staining of amniotic fluid(MSAF) occur in 10-14% pregnancies
 - Meconium staining on cord, nails, skin
 - Onset within 4-6 hrs.
 - Hyper inflated chest

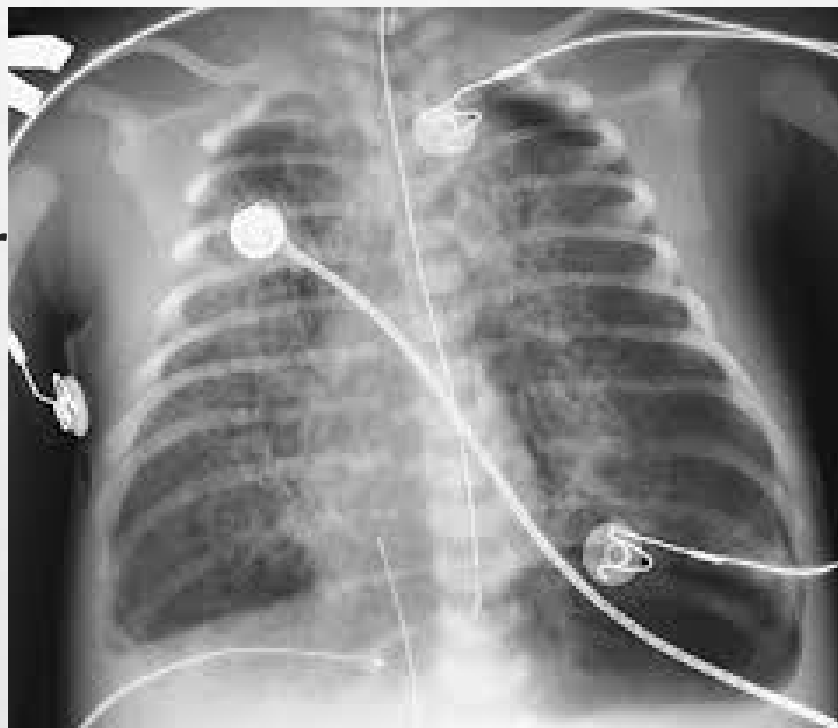
THICK : Atelectasis, air blockage, air leak syndrome

THIN : Chemical pneumonitis



Chest X-ray

Bilateral heterogeneous opacities, areas of hyper expansion and atelectasis and air leak



MANAGEMENT

- Good supportive care – body temperature, blood glucose and calcium levels ensuring analgesia and avoiding unnecessary fiddling.
- Oxygenation and ventilation.

TRANSIENT TACHYPNEA OF NEWBORN

It is a benign self limiting disease usually in term neonates and is due to clearance of lung fluid

These babies have tachypnea with minimal or nonrespiratory distress.

Chest X-ray – hyperexpanded lung fields, prominent vascular marking and prominent interlobar fissure

Treatment – oxygen treatment is adequate.



PNEUMONIA

Caused by bacteria – E.coli, S.aureus, K.pneumonia,
occasionally due to fungal and viral infections

PREDISPOSING FACTORS

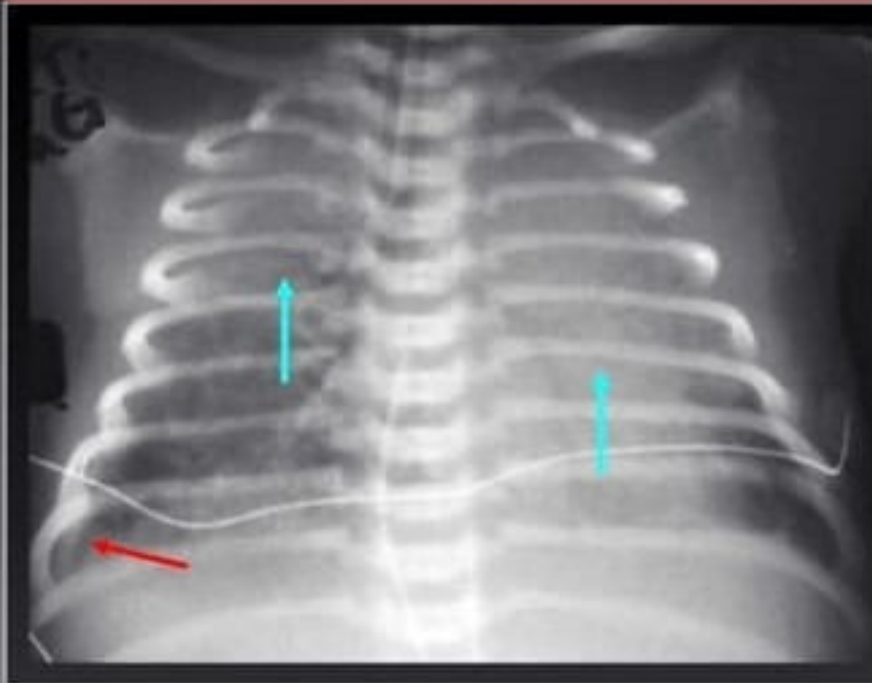
PROM > 24 hrs., peripartal fever, unclean or multiple
per vaginal delivery, foul smelling liquor

Chest X-ray shows pneumonia, blood counts are raised, blood culture may be positive

TREATMENT –

Supportive care and antibiotic therapy (ampicillin or cloxacillin with gentamycin)

Neonatal Pneumonia



- Patchy asymmetric densities
- Hyperinflation
- Pleural effusion



ASPHYXIA

- Myocardial dysfunction
- Cerebral oedema
- Asphyxia lung injury
- Metabolic acidosis
- Persistent pulmonary hypertension

PNEUMOTHARAX

ETIOLOGY

Spontaneous, MAS, positive pressure ventilation

CLINICAL FEATURES

Sudden distress, indistinct heart sounds

MANAGEMENT

Needle aspiration, chest tube

PERSISTANT PULMONARY HYPERTENSION

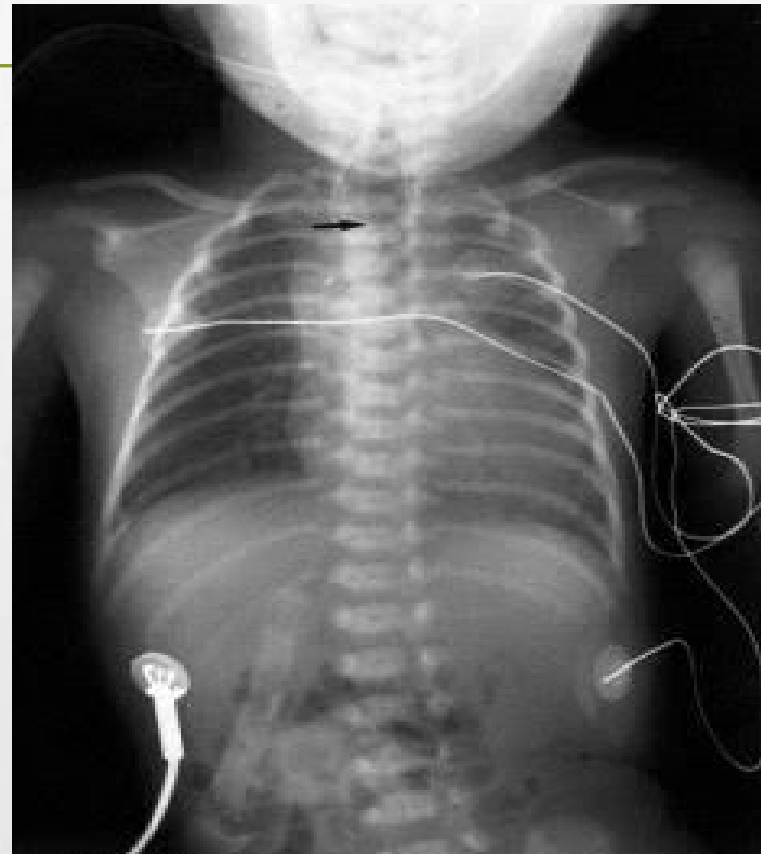
- Neonates preset with severe respiratory distress and cyanosis.
- **CAUSES**
 - Primary
 - Secondary : MAS, asphyxia, sepsis
- **MANAGEMENT**

Ventilatory support , pulmonary vasodilators like Nitric oxide

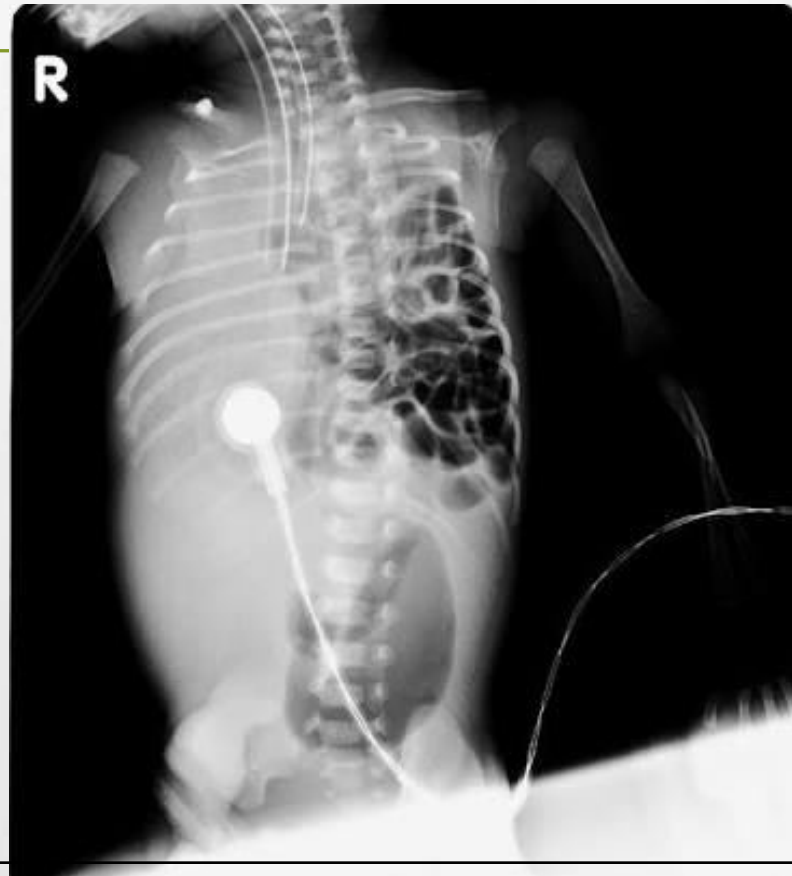
SURGICAL PROBLEMS

**TRACHEOESOPHAGAL
FISTULA** should be
suspected in case of
excessive frothing.

Plain X-ray with a red rubber
catheter inserted in stomach
: the catheter generally stops
at tenth thoracic vertebrae in
presence of oesophageal
attrition. Presence of gastric
bubble suggest TEF.



- **Diaphragmatic hernia** suspected in neonates was respiratory distress and ha scaphoid abdomen. Chest X-ray shows bowel loops in the thoracic cavity. This can detected during antenatal USG scanning.



THANK YOU
