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RESPIRATORY DISTRESS IN NEWBORN

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FEATURES

- Tachypnea – respiratory rate > 60/min
- Chest retractions
- Grunting
- Flaring of ala enasi
- Cyanosis

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CAUSES

MEDICAL

Pulmonary

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

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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, Werdning-Hoffman disease

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SURGICAL

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

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APPROACH TO RESPIRATORY DISTRESS

HISTORY

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

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EXAMINATION

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

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CHEST EXAMINATION

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

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ASSESMENT 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

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PRE-TERM POSSIBLE ETIOLOGY

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

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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

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SUSPECT SURGICAL CAUSE

- Scaphoid abdomen
- Frothing
- History of aspiration

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INVESTIGATION

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

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MANAGEMENT

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

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RESPIRATORY DISTRESS SYNDROME \ HYALINE MEMBRANE DISEASE

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RISK FACTORS

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

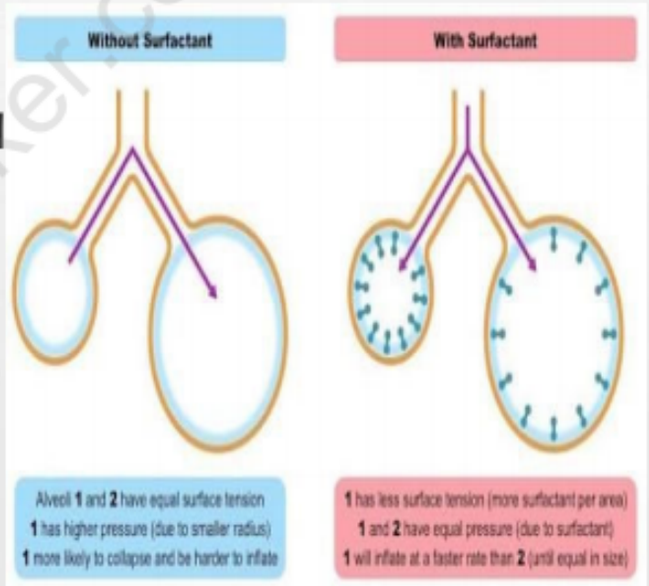
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ETIOPATHOGENISIS

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



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CLINICAL FEATURES

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

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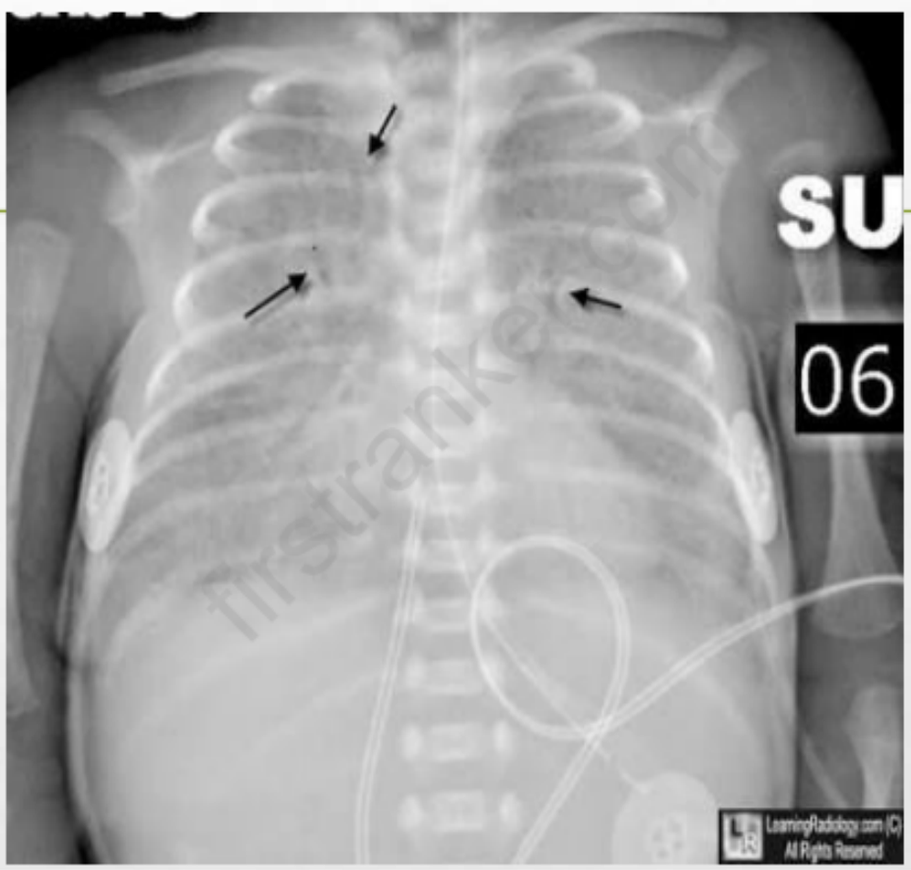
DIAGNOSIS

CHEST X-RAY

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

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MANAGEMENT

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

  DOSE: 100mg/ kg

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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.

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PREVENTION-

ANTENATAL STERIODS

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.

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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

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Chest X-ray

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



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MANAGEMENT

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

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TRANSIENT TACHYPNEA OF NEWBORN

It is a benign self liming 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 – hyperxpanded lung fields, prominent vascular marking and prominent imterlobar fissure

Treatment – oxygen treatment is adequate.

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PNEUMONIA

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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

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

TREATMENT –

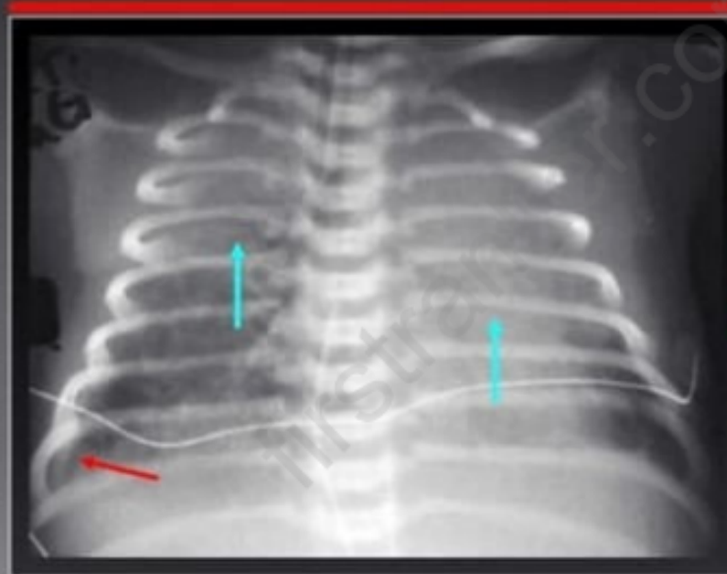
Supportive care and antibiotic therapy (ampicillin or cloxacilllin with gentamycin)

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Neonatal Pneumonia



- Patchy asymmetric densities
- Hyperinflation
- Pleural effusion

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ASPHYXIA

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

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PNEUMOTHARAX

ETIOLOGY

Spontaneous, MAS, positive pressure ventilation

CLINICAL FEATURES

Sudden distress, indistinct heart sounds

MANAGEMENT

Needle aspiration, chest tube

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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

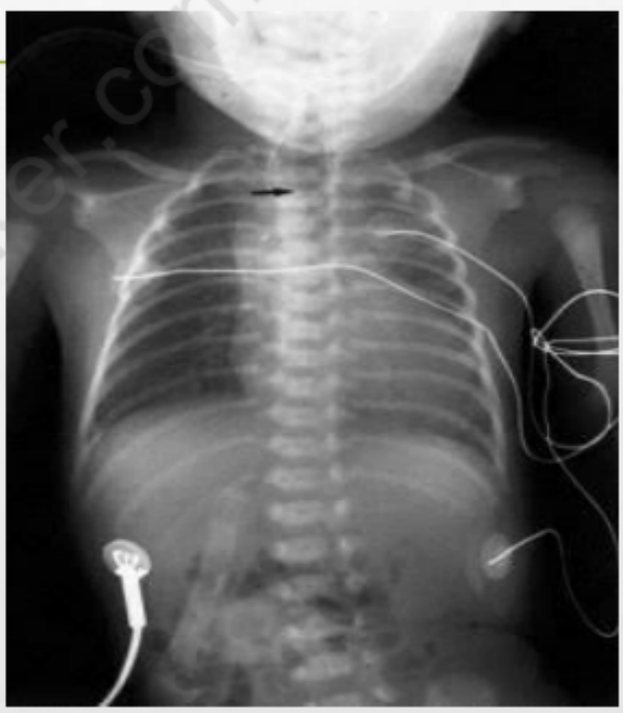
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SURGICAL PROBLEMS

TRACHEOESOPHAGAL FISTULA should be suspected in case of excessive frothing.

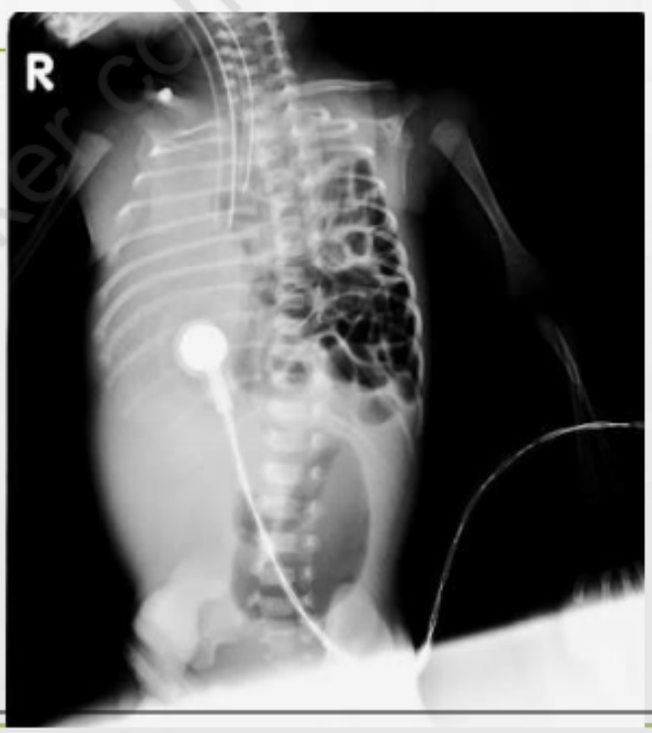
Plain X-ray with a red rubber catheter inserted in stomach : the catheter generally stops at tenth thoracic vertebrae in presence of oesophageal attrition. Presence of gastric bubble suggest TEF.



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- **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.



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THANK YOU

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