



NCCU CLINICAL GUIDELINES
SECTION: 2

RESPIRATORY PROBLEMS AND MANAGEMENT

Section 2: Respiratory problems and management
Transient Tachypnoea of the Newborn (TTN)
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Neonatology Clinical Care Unit Guidelines
King Edward Memorial/Princess Margaret Hospitals
Perth Western Australia
Authorisation & review by
Neonatal Coordinating Group

TRANSIENT TACHYPNOEA OF THE NEWBORN (TTN)

Respiratory problems in the newborn comprise the majority of problems dealt with in the Neonatal Intensive Care Unit. The epidemiology of different causes of respiratory distress is determined by the aetiology and can be divided into 2 broad areas.

Inadequate *in utero* maturation of the lung and mechanisms controlling respiratory function.

Disease processes present before or after birth which compromise respiratory function.

It is important to review the antenatal, delivery and postnatal history including key factors such as:

- PROM
- maternal pyrexia
- gestation
- liquor volume and content
- history of feeds
- presence and amount of mucus
- known anomalies

EPIDEMIOLOGY

TTN is respiratory distress due to failure of reabsorption, or delayed clearance of fetal pulmonary alveolar fluid. It affects 1% to 2% of all newborns, primarily full-term infants. There are several perinatal risk factors, including elective caesarean section, excessive administration of fluids to the mother during labour, maternal sedation, male gender, and macrosomia.

PATHOPHYSIOLOGY

TTN represents a transient pulmonary oedema resulting from delayed clearance of fetal lung liquid. There is an antenatal reduction in fetal lung liquid that results in a shift of fluid from the lung lumen into the interstitium. The secretion of fetal lung liquid is decreased or stops during labour. The initiation and process of labour is an important factor in this antenatal redistribution and absorption of lung liquid explaining in part, the higher incidence of TTN observed after elective caesarean section. Mechanical compression of the chest during the birthing process may also play a role.

Lung fluid is slowly resorbed from the interstitium over a 2-6 hour period postnatally via vascular and lymphatic systems. Any condition that increases hydrostatic pressure in the pulmonary vasculature can interfere with the appropriate resorption of fluid into the pulmonary circulation.

CLINICAL PRESENTATION/SIGNS/SYMPTOMS

- First hours of life with respiratory distress:
- Tachypnea (80-120 / min); Recession/retraction/ nasal flaring, grunting,
- Cyanosis which appears to resolve with < 40 % O₂
- Barrel chest (symmetric hyperinflation) in some infants

- Normally full-term infants, large for GA

INVESTIGATIONS

TTN may be indistinguishable from sepsis (NB pneumonia) or RDS and hence is a diagnosis of exclusion:

- Baseline observations
- Arterial blood gas (look for mild-moderate hypoxemia, mild hypercarbia)
- CXR (AP and Lateral)
- Prominent ill-defined central markings suggestive of vascular engorgement radiating out from hilum
- Prominence of interlobar fissures (fluid)
- Small pleural effusions may be seen
- Cardiac silhouette may be enlarged.
- FBC and U&Es, glucose, septic screen
- ECG/cardiac USS if suspecting Congenital Heart Disease.

MANAGEMENT

TTN follows a benign course. Treatment principles include proper stabilisation, adequate monitoring and careful evaluation/exclusion of more serious conditions. Most neonates improve within 2-5 days.

- Provide oxygen as required to maintain normal PaO₂ levels
- Invasive mechanical ventilation usually not required
- Cover with antibiotics for 48 hours
- Mild fluid restriction
- Commence feeds as soon as infant can tolerate them