NCCU CLINICAL GUIDELINES
SECTION: 2

RESPIRATORY PROBLEMS AND MANAGEMENT

Section 2: Respiratory problems and management
post-asphyxial and post-obstructive pulmonary oedema
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POST-ASPHYXIAL AND POST-OBSTRUCTIVE PULMONARY OEDEMA

Pulmonary oedema secondary to a cerebral insult and upper airways obstruction, respectively.

EPIDEMIOLOGY

The incidence of post-asphyxial pulmonary oedema is unknown but is well documented anecdotally. Acute upper airways obstruction is reported in both paediatric and adult populations to be between 9-12% of all patients with upper airways obstruction.

PATHOPHYSIOLOGY

The pathophysiology is thought to be due either to reflexes between neurotransmitters released after a cerebral insult and their effect on the myocardium, or to direct myocardial depression from myocardial cell damage. Both lead to impaired left ventricular function, increased left atrial pressures, and pulmonary oedema.

Upper airways obstruction is thought to cause pulmonary oedema through the production of a negative intrathoracic pressure. This causes pulmonary capillary disruption and exudation in the lungs, by increasing venous return and hence increasing pulmonary capillary pressure, leading to pulmonary oedema.

CLINICAL PRESENTATION

In the case of post-asphyxial oedema, the patient may present with signs of asphyxia or raised intracranial pressure, and will be poorly perfused due to hypotension. There may be decreased urine output contributing to fluid retention and pulmonary oedema. The infant may be seizing due to hypoxic ischaemic encephalopathy.

Those with upper airway obstruction may have croup, tracheal atresia/stenosis, or a mass obstructing the airway. In each case the patient may become tachycardic, tachypneic, cyanosed, and cough up pink frothy sputum.

The outcome is dependent on the cause of the pulmonary oedema.

MANAGEMENT

1. If the infant is not maintaining oxygen saturations, it should be intubated. Nasal CPAP may be adequate in an otherwise stable infant. This will splint the airways as well as improve after load on the heart to decrease the pulmonary oedema.
2. If the infant is fluid overloaded, diuretics may help. Minimise fluids, to minimise excess pulmonary blood flow. Inotrope may improve cardiac function.
3. Any physical obstruction should be relieved. Any cerebral mass/hydrocephalus, should also be relieved.