

Laryngeal Spasm and Negative Pressure Pulmonary Oedema

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Acute Laryngeal Spasm can result in airway obstruction and life threatening pulmonary Oedema due to negative intra thoracic pressure. Hence prevention and early recognition of the problem should be addressed.

Larynx is the inlet for the respiratory system. Any obstruction at the Larynx blocks the air which enters and equalises the negative pressure produced by the lungs during inspiration. The normal intra pulmonary pressure is -1 cm of H₂O at the start of inspiration. This pressure reaches +1mm at the start of expiration. However intrapleural pressure is between - 5 cm and -7.5 cm of H₂O during this process and always maintains a negativity. When an individual tries to inspire with an obstructed upper airway, this pressure drops to -50 cm of H₂O and in extreme cases have been known to exceed -100 cm of H₂O.

Pulmonary circulation is a low pressure system and the capillary pressure is about 10mm of mercury. The normal oncotic pressure is 25mm of mercury. Any decrease in oncotic pressure (hypoproteinemia) or increase in hydrostatic pressure (due to increased pressure in pulmonary vessels) will produce pulmonary Oedema. In negative pressure pulmonary Oedema not only does the pulmonary vascular pressure increases but some amount of damage occurs also to the alveolar membrane, which causes passage of fluid into alveoli.

Management of NPPE

Obstruction should be relieved by endo tracheal intubation

Positive pressure ventilation with PEEP

Diuretics and antibiotics

Usually the patients need short term ventilation and recover without any complications.

Laryngeal spasm leading to NPPE is a preventable incident if intervened early. Eternal vigilance of the Anaesthetist could avoid this complication.