

HEAVY WEIGHT, HEAVY BREATHING: TACKLING RESPIRATORY COMPLICATIONS IN MORBIDLY OBESE.

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According to literature any adult with body mass index (BMI) more than 30 kg/m² is considered obese and person with BMI more ≥ 40 Kg/m² is considered morbidly obese. Obesity causes major alterations in pulmonary mechanics. It can have profound adverse effects on the respiratory system, including an impact on pulmonary function, respiratory mechanics, respiratory muscle strength and endurance, gas exchange, control of breathing, and exercise capacity. Lung mechanics are modified by increased pleural pressure resulting from increased abdominal mass in obese patients and subsequent peripheral airway occlusion and worsening of lung compliance due to reduced functional residual capacity (FRC) without impairment of chest wall compliance. The fall in FRC promotes airway closure and atelectasis formation. Considering the particular pathophysiological features of respiratory system in obese patients, the risk of ventilator induced lung injury (VILI) is highly observed in patients on ventilator. Arterial blood gases are frequently altered in these subjects and these abnormalities are directly proportional to BMI. Mechanisms that may account for gas exchange abnormalities are multiple: ventilation/perfusion inequality and alveolar hypoventilation responsible for so-called obesity hypoventilation syndrome (OHS). OHS is frequently underappreciated and diagnosis is frequently made during a first acute exacerbation of breathing difficulty in morbidly obese. Obstructive sleep apnoea (OSA) is a condition frequently associated with obesity and must be systematically screened for in this population because of its impact on morbidity and therapeutic management. Noninvasive ventilation (NIV) is considered as the first-line therapy in patients with obesity before consideration of invasive mechanical ventilation (NIV) is made. Non-invasive strategies should first optimize body position with reverse Trendelenburg position or sitting position. Mechanical ventilation in patients with and without ARDS, low tidal volume (6 ml/kg of predicted body weight) and moderate to high positive end-expiratory pressure (PEEP), with careful recruitment maneuver in selected patients, are advised. Pressure controlled Ventilation (PCV) is frequently preferred mode in IMV for obese. Suggested initial ventilatory settings are: FIO₂ – 0.6, Tidal Volume 5 – 7 ml /Kg predicted body weight, PEEP 7 – 10 cm H₂O and Peak inspiratory pressure < 35 cm H₂O. Prone positioning is a therapeutic choice in severe ARDS patients with obesity. Prone positioning of morbidly obese patients in ICU is a team work of several ICU nurses and aid-nurses. In a patient with COPD who is obese, it should be borne in mind that obesity is probably the predominant factor predisposing to respiratory failure. NIV effectively prevents endotracheal intubation and promotes survival in patients with respiratory failure in significant number of critically ill obese ICU patients.

Keywords: Obesity, hypoventilation syndrome, Mechanical ventilation, Respiratory mechanics

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