

Severe Dynamic Hyperinflation during Mechanical Ventilation in Asthma and COPD; The Role of Neurally Adjusted Ventilatory Assist (NAVA)

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Dynamic hyperinflation is a well known phenomenon in chronic obstructive pulmonary disease (COPD). It depends on expiratory airflow resistance and expiratory time. During exercise there is a gradual increase of the functional residual capacity (FRC) and end expiratory lung volume (EELV) while there is a decrease of inspiratory capacity (IC). From the Campbell diagram can be depicted that the work of breathing will be increased, so limiting exercise capacity.

In this lecture clinical cases will be discussed with complicated mechanical ventilation in patients with status asthmaticus and acute exacerbation of COPD. Special attention will be paid to the problem of maltriggering during support ventilation. In this situation NAVA may help to overcome the problem of auto-PEEP, in which the neuromuscular output (EdI) is directly derived from the phrenic nerve. Patient ventilator synchrony can so be restored. NAVA can be used whether in invasively ventilated patients as a support mode, or in case of non-invasive ventilation (NIV-NAVA). The Edi signal can be helpful in revealing exhaustion during weaning or can be diagnostic in neuromuscular disease.

Literature:

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