

Our Editor's Choice paper, by Pinciroli et al, is a randomized controlled clinical study of endotracheal tubes (ETT) cleaned with a novel mechanism for secretion removal. They found that a device for ETT cleaning was safe, and it effectively prevented luminal occlusion. Cacao and colleagues point out that, although this device has potential for use in clinical practice, it is necessary to investigate other important outcomes such as mortality and cost.

Volume-targeted noninvasive ventilation (VT-NIV) is a hybrid mode that delivers a preset target tidal volume through the automated adjustment of pressure support. The effectiveness of VT-NIV in improving ventilatory status in subjects with acute hypercapnic respiratory failure was evaluated by Cao and colleagues. They found that VT-NIV or pressure-limited-NIV provided similar support in subjects with acute hypercapnic respiratory failure. In their editorial, Frat and Thille state that we cannot exclude the possibility that a volume-targeted mode may be beneficial in patients with acute alterations of respiratory mechanical properties, or in case of hypercapnic encephalopathy with altered respiratory drive.

The objective of the study by Morgan and colleagues was to assess the feasibility, safety, and efficacy of continuous high frequency oscillation therapy in mechanically ventilated pediatric subjects. Their findings suggest that this therapy may be beneficial by improving lung compliance in pediatric patients with secretion-induced atelectasis. Prospective clinical studies are needed to further evaluate clinical efficacy and safety in children receiving invasive mechanical ventilation.

Lellouche et al evaluated an innovative closed-loop system that automatically adjusts the oxygen flow for subjects with COPD, such as during ambulatory conditions. They found that automatic titration of oxygen flow during walking to maintain  $S_{pO_2}$  in a specified range improved oxygenation and may improve exercise tolerance during daily activity, compared to a fixed oxygen administration.

Gama-glutamyl transferase (GGT) is an enzyme present in the cell membranes that is used as a biomarker in prediction of inflammation, myocardial infarction, stroke and cardiac death. Bozkus et al investigated the relationship between serum levels of GGT and cardiovascular disease in subjects with COPD. Their results demonstrate that serum levels of GGT may be helpful in grading the severity of COPD as a marker of oxidative stress. There was also a strong correlation between high serum levels of GGT and cardiovascular events in subjects with COPD.

Kaneko and colleagues assessed reduced chest and abdominal wall mobility, and its relationship to lung function, respiratory muscle strength, and exercise tolerance in subjects with COPD. The majority of the subjects with COPD had reduced chest and abdominal wall mobility, which was independently associated with FVC. Even though abdominal wall mobility was relatively preserved compared to chest wall mobility, it was also independently associated with 6-min walk distance.

Gunay et al investigated the predictor role of the plasma levels of lipid parameters and atherogenic indices on the development of atherosclerosis in subjects with COPD. They

found that atherogenic indices could be considered a useful predictor for atherosclerosis and cardiovascular diseases in patients with stable COPD.

Static and functional balance in individuals with COPD was evaluated by de Castro and colleagues. They compared static and functional balance between subjects with COPD and healthy controls. Individuals with COPD had worse static and functional balance in comparison to controls. Sex can mediate these results depending on the type of balance evaluation – either force platform or functional test. Balance performance was similar among the groups classified according to disease severity.

Nakahara and colleagues conducted an observational propensity-matched cohort study using a nationwide database to evaluate the mortality-reducing effect of rehabilitation for subjects with COPD. They found that rehabilitation contributed to a reduction of in-hospital mortality.

The objective of the study by McCartney and colleagues was to better characterize the response of residual volume and total lung capacity to bronchodilators used to assess reversibility in obstructive lung disease. They found that a significant number of subjects classified as being nonresponsive based on spirometry had reversible residual volumes. The identification of this subgroup better characterizes the heterogeneity of obstructive lung disease.

Guan et al investigated the diagnostic value of impulse oscillometry and spirometric small airway parameters and their correlation with radiology, disease severity and sputum bacteriology in mild-to-moderate bronchiectasis. Impulse oscillometry and spirometric small airway parameters had similar diagnostic value in reflecting peripheral airway disorders, and correlated with chest high-resolution computed tomography scores, the Bronchiectasis Severity Index, and the number of bronchiectatic lobes in mild-to-moderate bronchiectasis.

Blagev and colleagues determined the differences in PFT interpretation when the largest measured vital capacity ( $VC_{max}$ ) was used instead of FVC. There were 6% of PFTs that had a different interpretation when  $VC_{max}$  was used instead of FVC. Thus, evaluating borderline or ambiguous PFTs using the  $VC_{max}$  may be informative in diagnosing obstruction and excluding restriction.

The impact of mechanical ventilation on lung volumes and maximal respiratory pressures in subjects with Duchenne muscular dystrophy was evaluated by Brasil Santos and colleagues. Home mechanical ventilation was followed by slowing of the declines in vital capacity and in maximal static inspiratory and expiratory pressures.

Keenan and colleagues assessed the effect of compartmental asymmetry on the monitoring of pulmonary mechanics and lung volumes. In mechanically ventilated swine, they modeled unilateral atelectasis, and unilateral and bilateral lung injury exposed to intra-abdominal hypertension (IAP). Transpulmonary pressure tracked aerated lung volume in the setting of thoracic asymmetry and changes in IAP. However, transpulmonary pressure alone cannot distinguish the relative contributions of airspace distention and recruitment of lung units.