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Letter to the Editor

Safety of Fiberoptic Bronchoscopy in Airway Pressure Release Ventilation Mode in Critically Ill Patients: Are These Results Safe?

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Dear Editor,

The current recommendations for performing bronchoscopies in intubated and mechanically ventilated patients indicate that the tidal volume (Vt) can be increased between 100 and 150 mL or the pressure limits/inspiratory pressures which guarantees an adequate Vt and ventilator setting should preferably be in mandatory mode.[1]

We have carefully read the recently published study titled, "The Safety of Fiberoptic Bronchoscopy in Airway Pressure Release Ventilation Mode in Critically Ill Patients with Severe Acute Respiratory Distress Syndrome: A Preliminary Study"[2] and have the following concerns regarding the methodology, validity, and recommendations made on the basis of the reported results.[3]

First, the authors describe a sample of 79 ventilated patients undergoing bronchoscopy, including 14 patients with severe acute respiratory distress syndrome (ARDS) with partial pressure of arterial oxygen (PaO_2)/fraction of inspired oxygen (FiO_2)142 (119-221). Four patients were excluded due to missing data, which could represent up to one-quarter of the patients undergoing bronchoscopy in the APRV mode (22% of missing data).

Second, the intensive care unit sedation protocol in this study included midazolam and fentanyl infusions with a neuromuscular relaxant rocuronium as needed during the procedure. However, the authors do not detail the need for relaxation. In daily practice, the use of muscle relaxants in critically ill patients requiring bronchoalveolar lavage (BAL) is generally due to bronchospasm, patient-ventilator maladjustment, or elevated airway pressure.[3] However, these factors should not be at play here as APRV encourages spontaneous breathing efforts to increase the final end-inspiratory transpulmonary pressure much higher than the set P-high of 30 cm H_2O.[4]

Third, the authors describe premature termination of the procedure, hypoxemia, and increased requirement for vasopressors within the first 24 hours in 3/14 patients, representing 21% of complications during the procedure. The high incidence of mortality (10/14, 71.4%) described in this series with the use of this ventilatory mode was striking as ARDS is characterized by a lower global mortality near 40%-60%.[5]

Fourth, despite the authors reporting that all procedures were performed by an intensivist-pulmonologist with >15 years of expertise in performing FB in critically ill patients. The mean values of pH 7.28 (7.21-7.37) 1 hour after the procedure are striking: during bronchoscopy in ventilated patients with severe ARDS, special attention should be paid to Vt drops and leak compensation during the performance of the procedure, particularly during the introduction of the bronchoscope into the airway.

The Evita Infinity V500 quickly recognizes and compensates for leakage by adjusting both the inspiratory trigger and termination points. There were no leak monitoring reports or the use of a compensation mechanism during the performance of these procedures.

Fifth, in this series, 35% of the patients had a diagnosis of severe ARDS secondary to pneumonia, and only 20% of the patients survived with some post-bronchoscopy antibiotic adjustment. In critically ill patients with severe ARDS, routine

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bronchoscopy-guided sampling for the diagnosis of ventilator-associated pneumonia is recommended in patients not responding to empirical antibiotic therapy.

In short, we believe that until further conclusive evidence is available, fiberoptic bronchoscopy in patients with biphasic APRV ventilation mode should be performed with utmost caution.

Declaration of Interests: The authors have no conflict of interest to declare.

Editor's Note: No response was received from Öztürk et al.

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