Category :**Respiratory: mechanical ventilation**

A98 - ***Qualitative evaluation of different mechanical lung ventilation methods***

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Introduction:

It is known that ventilator related mechanical power (MP) can cause ventilator-induced lung injury (VILI), especially if chosen method and settings of ventilation are inadequate. The aim of this study was to perform qualitative analysis of various mechanical lung ventilation modes by composing and applying a methodology for processing and evaluating large data sets.

Methods:

Data collected during one of the phases of the research conducted at the Republican Vilnius University Hospital in the period of 2020-2022 were analysed. Mechanical lung ventilation data were obtained from Hamilton S1 ventilator database. Criteria for rejecting false ventilation cycles were defined. Assessment of MP, driving pressure and inspiratory pressure was performed for qualitative evaluation of different ventilation modes. Calculation of MP was carried out according to formulas described in the literature.

Results:

Mechanical lung ventilation data of 8 patients were collected during the study period (6 were ventilated with adaptive support ventilation mode, 2 – pressure controlled ventilation mode). 241143 ventilation cycles were analysed, 9309 (3.86 %) of which met false criteria. Average MP and driving pressure values ranged from 8.69 J/min to 29.34 J/min and from 4.69 cmH_2O to 14.69 cmH_2O accordingly. Proportion of detected ventilation cycles in which driving pressure exceeded 15 cmH_2O ranged from 0 % to 24.89 %. Estimated inspiratory pressure values varied from 5 cmH_2O to 15 cmH_2O.

Conclusion:

Criteria reflecting false mechanical lung ventilation cycles were developed. Calculated MP generated using different mechanical lung ventilation modes raged from 8.69 J/min to 29.34 J/min. Episodes of ventilation cycles that exceeded limits of safe mechanical lung ventilation strategy, observed in majority of patients, were not associated with increased risk of VILI.