Abstract ATS 2012

Study Of The Effectiveness Of A New Inhalation Chamber In Invasive Mechanical Ventilation

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Rationale: The aim of this study was to evaluate the effectiveness of a new inhalation chamber (PX01) connected with a pMDI and a nebulizer in invasive mechanical ventilation.

Methods: To assess the PX01 inhalation chamber in clinical conditions, assembly below including a respirator (Volume controlled, Vc = 450mL, f = 15/min, PEEP = 6, P max = 19, Ti / Ttot = 40/60) and a model of adult lung Dual TTL model 5600i (Michigan Instruments) was used. A filter was placed after the endotracheal tube to measure salbutamol by spectrophotometry after nebulization and after aerosolization.

Results: After nebulization, the mass of salbutamol deposited on the filter, that is located after the endotracheal tube, was twice higher with the PX01 inhalation chamber than the Aerogen T-adapter (659.7±224.6 µg vs 312.9±100.2 µg). In addition, the PX01 inhalation with a short cone was more effective than the PX02 inhalation chamber with a long cone (659.7±224.6 µg vs 477.7±167.5 µg). After aerosolization, the mass of salbutamol deposited on the filter was similar between the Ace Spacer and the PX01 inhalation chamber (181.1±54.4 µg vs 225.4±60.1 µg).

Conclusion: In conclusion, the PX01 inhalation chamber increased the efficacy of nebulization in invasive mechanical ventilation.