

Study of the performances of a new spacer in mechanical ventilation.

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The objective of this study was to evaluate the performances of a new spacer called Combihaler (Protec'som, France) to improve drugs delivery either from nebulizer or pMDI.

To assess the Combihaler chamber in clinical conditions, assembly includes 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 5600i (Michigan Instruments). Ventilation parameters were measured with and without the new spacer. A filter was placed after the endotracheal tube to measure aerosol delivery. Amikacin (1g/8ml) was nebulized with an Aeroneb (Aerogen, Ireland) and a T piece or a Combihaler. Salbutamol was delivered with a pMDI (Salbutamol) and a T-piece (Allegiance Healthcare Corporation) or a Combihaler. Drug deposited on filter were assayed. Amikacin was measured with an electrochemical tracer and salbutamol was measured by spectrophotometry.

The use of the Combihaler didn't change the ventilation parameters (p=0.82). The mass of amikacin deposited on the filter was twice higher with the Combihaler chamber compared with the Aerogen T-adapter (394.4±8.9 mg vs 142.4±4.9 mg). The mass of salbutamol deposited on the filter was increased with Combihaler chamber in comparison with T-piece (62.7±0.7 µg vs 18.8±1.9 µg).

In conclusion, the Combihaler chamber doesn't modified ventilator parameters and increases drug delivery by mesh nebulizer and pMDI.