Conclusion In patients attending a severe asthma clinic physiotherapy techniques (ACT and HS-7) were safe and effective. Bronchoscopy had similar requirement for rescue salbutamol nebulisation compared to HS-7, but a higher risk (2%) of severe asthma exacerbation.

REFERENCE


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FUNGAL CONTAMINATION OF VALVED HOLDING CHAMBERS (VHCS): POTENTIAL TO PREVENT, AND EFFECT ON DRUG DELIVERY

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Introduction and objectives Able Spacerâ–2 VHC (AS2) is one of many accessory devices available to improve pressurised metered dose inhaler (pMDI) drug delivery, but uniquely includes a ~ 1wt% body polymer silver ion additive (~1%Ag+) to combat microbial growth and reduce static. Drug-specific bacterial growth on VHC polymers1 and the bacterial growth-reducing effects of the Ag+ polymer are known. The fungal pathogen Aspergillus fumigatus causes serious pulmonary disease. We assessed the effect of 4%Ag+ on fungal activity and, subsequently, drug delivery characteristics.

Methods Determination of fungal sporicial activity was via modified ISO22196:2011 using flat body polymer discs (n = 3) of AS2 ~ 1% Ag+ and AS2 4%Ag+, and sterile Control (same polymer minus Ag+, n = 6). 100mL A. fumigatus (5.0 x 10^6 spores/mL distilled water) was pipetted onto disc surfaces. Samples were incubated for 24 h at 35°C/ > 95% relative humidity, with silver ions neutralised thereafter. Colony forming units (CFU) were enumerated by spiral dilution and converted to CFU/cm². Aerosol performance of salbutamol (as salbutamol sulphate) pMDI (Ventolinâ Evohaler, GSK) through AS2 VHC (~1% Ag+ and as standard) and a newly-developed AS2 4% Ag+ VHC was assessed through a Next Generation Impactor (NGI) at 30 L/min.

Results 24 h geometric mean Log_{10} A. fumigatus CFU/cm² were 4.2 x 10^3 (Control), 2.8 x 10^3 (~1% Ag+), and 4.5 x 10^2 (4% Ag+), representing Log_{10} and% reductions from Control of 0.2 (34%) and 1.0 (89%) for ~1% Ag+ and 4% Ag+. Key salbutamol aerosol performance data were emitted dose (mg) 95.9 ± 11.0 and 94.9 ± 9.1; fine particle fraction (% < 5.0 mm) 54.0 ± 4.3 and 53.6 ± 1.9; and fine particle dose (mg < 5.0 mm) 52.0 ± 8.7 and 50.7 ± 3.8 for AS2 ~1% Ag+ and AS2 4% Ag+ respectively. NGI recovery (Figure 1) profiles were very similar, including the VHC component: 38.9 ± 4.2 (AS2 ~1% Ag+) and 40.2 ± 5.3 (AS2 4% Ag+).

Conclusions Use of 4%Ag+ additive did not affect salbutamol aerosol performance and showed greater effect on A. fumigatus sporocidal activity in vitro. VHC fungal Candida spp. and nebuliser Aspergillus spp. have been identified. The moist, anti-static setting of the Chamber may support and, of more concern, promote aerosolisation into the lungs of fungal material. Further research and understanding are necessary.

REFERENCE

1 Sanders. PCRM 2016;26(16022):16.