METHOD

• 8 adult subjects, male and female, diagnosed with asthma by demonstrating a ≥200 ml FEV1 response to inhaled albuterol by spirometry were randomized to 5 treatment modalities: (1) 2-actuations by metered dose inhaler (pMDI)-VHC-mousetpiece (2) 4-actations pMDI-VHC-mouthpiece (3) 2-actuations pMDI-VHC-face mask (4) 4-actuations pMDI-VHC-face mask (5) unit dose (3ml, 2.5mg) ampule via small-volume nebulizer-face mask.

Each subject was evaluated on 5 consecutive mornings withholding their beta-agonist prior to testing. Heart rate, oxygen saturation, perceived work of breathing (BORG), and hand tremor was assessed during treatment, 15, 30 minutes post treatment. Using BORG as a measure of effective delivery, all methods except (5) were shown to be statistically significant (p<0.05) when comparing mean ANOVA methods at baseline, 15, 30 minutes. Mean FEV1 at both 15, 30 minutes post treatment was measurable higher than baseline values across treatment methods correlating with BORG findings. No side effects were noted during the study. Although the study demonstrated substantial equivalence between treatments, additional subjects must be used to improve statistical power. The pMDI+VHC method avoids exposing the therapist to fugitive albuterol emissions and allows the respiratory therapist time to train the patient in correct inhaler technique.

COMPARISON OF VALVED-HOLDING CHAMBER (VHC)-FACEMASK/MOUTHPIECE WITH SMALL VOLUME NEBULIZER-FACEMASK FOR BRONCHODILATOR DELIVERY

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ABSTRACT

Aerosolized medications now represent the standard-of-care for asthma. We report a preliminary study to test the hypothesis that treatment by anti-static VHC-mousetpiece (Aerochamber MAX® Monaghan Medical Corp., Plattsburgh, NY, USA) is as effective as via nebulizer-face mask based on FEV1 and dyspnea score. 8 adult subjects diagnosed with asthma demonstrating a ≥200 ml FEV1 response to inhaled albuterol by spirometry were randomized to 5 treatment modalities: (1) 2-actuations by metered dose inhaler (pMDI)-VHC-mouthpiece (2) 4-actations pMDI-VHC-mouthpiece (3) 2-actuations pMDI-VHC-face mask (4) 4-actuations pMDI-VHC-face mask (5) unit dose (3ml, 2.5mg) ampule via small-volume nebulizer-face mask. Each subject was evaluated on a different treatment on 5 consecutive mornings withholding their beta-agonist prior to testing. Heart rate, oxygen saturation, perceived work of breathing (BORG), and hand tremor was assessed during treatment, 15, 30 minutes post treatment. Using BORG as a measure of effective delivery, all methods except (5) were shown to be statistically significant (p<0.05) when comparing mean ANOVA methods at baseline, 15, 30 minutes. Mean FEV1 at both 15, 30 minutes post treatment was measurable higher than baseline values across treatment methods correlating with BORG findings. No side effects were noted during the study. Although the study demonstrated substantial equivalence between treatments, additional subjects must be used to improve statistical power. The pMDI+VHC method avoids exposing the therapist to fugitive albuterol emissions and allows the respiratory therapist time to train the patient in correct inhaler technique.

INTRODUCTION

Inhaled medication delivered in aerosol form is widely prescribed for the treatment of asthma. The pMDI is a popular inhaler choice because of its convenience, portability and efficiency. In this preliminary study, we are testing the hypothesis that albuterol pMDI treatment administered by an anti-static VHC-mousetpiece and VHC-mouthpiece (Aerochamber MAX® Monaghan Medical Corp., Plattsburgh, NY, USA) are as effective as via nebulizer-face mask based on spirometry FEV1 and dyspnea.

The following devices were used in delivering the nebulizer treatment:• PARI PRONEB TURBO air compressor• Salter Labs I-Guard Aerosol Mask (adult)• HUDSON RCI MICRO MIST Nebulizer with tubing

RESULTS

CONCLUSIONS

• The study demonstrated substantial equivalence between treatments
• Additional subjects must be studied to improve statistical power
• Using the pMDI+VHC method avoids exposing the therapist to fugitive albuterol emissions
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