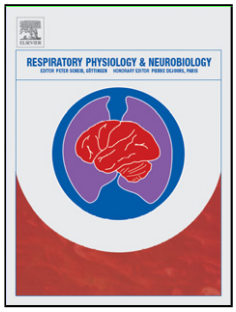

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AEROSOL FUROSEMIDE FOR DYSPNEA: HIGH-DOSE CONTROLLED DELIVERY DOES NOT IMPROVE EFFECTIVENESS

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HIGHLIGHTS

- We tested hypotheses that might explain failure of aerosol furosemide to alleviate experimental dyspnea.
- Control of aerosol delivery did not increase the proportion of subjects who responded.
- Doubling furosemide dose did not increase the proportion of subjects who responded..
- Response variation was partially explained by variation of response to large breaths.

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ABSTRACT

Published studies have shown great variability in response when aerosolized furosemide has been tested as a palliative treatment for dyspnea. We hypothesized that a higher furosemide dose with controlled aerosol administration would produce consistent dyspnea relief. We optimized deposition by controlling inspiratory flow (300-500 ml/s) and tidal volume (15% predicted vital capacity) while delivering 3.4 micron aerosol from either saline or 80 mg of furosemide. We induced dyspnea in healthy subjects by varying inspired P_{CO_2} while restricting minute ventilation. Subjects rated "Breathing Discomfort" on a Visual Analog Scale (BDVAS, 100% Full Scale ≡ intolerable). At the PET_{CO_2} producing 60% BDVAS pre-treatment, furosemide produced a clinically meaningful reduction of BDVAS (i.e., > 20%FS) in 5/11 subjects; saline reduced dyspnea in 3/11 subjects; neither treatment worsened dyspnea in any subject. Furosemide and saline treatment effects were not statistically different. There were no significant adverse events. Higher furosemide dose and controlled delivery did not improve consistency of treatment effect compared with prior studies.

Keywords: Dyspnea, Furosemide, Palliative care, Symptom management