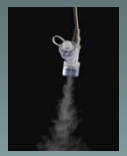
ADMINISTRATION OF HELIOX AND BRONCHODILATOR AEROSOL VIA HIGH FLOW NASAL CANNULA IN A SEVERE ASTHMATIC



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ABSTRACT

ADMINISTRATION OF HELIOX AND BRONCHODILATOR AEROSOL VIA HIGH FLOW NASAL CANNULA IN A SEVERE ASTHMATIC
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Introduction: **Benefit of heliox as adjunct therapy in the treatment of asthma has traditionally been administered via non-rebreather mask (NRB). Literature review suggests benefit in administering heliox via high flow nasal cannula (HFNC)1. In addition, a benchmark study recently demonstrated the effective delivery of aerosol particles through the HFNC utilizing a vibrating mesh nebulizer (VM)2. We hypothesized that this combination would be beneficial in patient's refractory to therapy providing a potentially cumulative therapeutic effect.**
Case Summary: **A 56 year old admitted for severe asthma exacerbation continued to deteriorate despite treatment with IV steroids, 2.5 mg of albuterol Q4° via Airlife Brand Misty Max 10 TM SVN powered by heliox and 80/20 heliox via NRB.**
36 hours post admission RR was 45 with significant use of accessory muscles, breath sounds were barely audible andSpO2 94% with intubation impending. The patient was placed on HFNC (Fisher & Paykel Optiflow®) with 15 lpm of 80/20 heliox. The Aerogen Aeroneb® Solo VM placed in-line distal to the humidifier to administer albuterol produced increased aeration post-treatment compared to SVN via MP. She demonstrated an immediate improvement in response to the heliox including the expected vocal alteration, increased SpO2, significantly increased aeration and subjective relief. She continued to improve and was weaned off within 24 hours.
Discussion: **The NRB did not deliver adequate heliox concentration to alter vocal change or provide symptomatic relief in contrast to the HFNC. Aerosol via HFNC provided greater symptomatic relief than SVN via MP. This agrees with the in vitro studies showing up to18% inhaled mass with aerosols with MMAD < 2 micron through nasal prongs. This is the first clinical report of effective bronchodilator aerosol delivery via HFNC. Combination of heliox, humidified HFNC and aerosol utilizing VM may be an effective adjunct therapy in severe asthma. Benefits include reduced turbulent flow, warmed humidified gas, improved particle distribution afforded by the use of heliox as the carrier gas3, and the effective aerosol delivery via HFNC with the Aeroneb Solo VM nebulizer.5**

REFERENCES

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INTRODUCTION

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DISCUSSION

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Combination of heliox, humidified HFNC and aerosol utilizing VM may be an effective adjunct therapy in severe asthma. Benefits include reduced turbulent flow, warmed humidified gas, improved particle distribution afforded by the use of heliox as the carrier gas3, and the effective aerosol delivery.