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Heliox as adjunctive therapy to treat *rhinovirus/enterovirus* infection related respiratory failure in infants and children – A case review

S E Morgan, S Mosakowski, M Brown and R Lavani
University of Chicago Medicine, USA

Influenza-like respiratory infections is a frequent trigger for status asthmaticus. Helium-oxygen (heliox) gas mixtures, has been used for decades to treat pulmonary exacerbations. The lower density and higher viscosity of heliox relative to nitrogen-oxygen mixtures can significantly reduce airway resistance, though little evidence exist regarding efficacy in viral-related lung disease. The morbidity and mortality of these viruses is significant with regard to infants and children. In the summer of 2014 > 600 kids were admitted to Comer Children's Hospital with rhinovirus-enterovirus. Infections in children may cause bronchitis, viral bronchiolitis and pneumonia in variable combinations and may impede air-flow enough to be the etiology of respiratory failure. We present the case review of two pediatric patients treated with heliox who experienced resolution of respiratory failure through the use of heliox. First case; a 10-month old Hispanic male diagnosed with a history of seizures, coronavirus – HCoV-43 and rhinovirus-enterovirus treated with high flow nasal cannula and heliox to avoid re-intubation. Before heliox the patient was tachypnea 60-70 breaths/min. After heliox, his respiratory rate fell 31-38 breaths/min. The second case review is a 4 year old female, diagnosed with rhinovirus-enterovirus that required mechanical ventilation with heliox to treat refractory hypoxichypercarbic (PaCO₂-118 mmHg) respiratory failure. The benefit of heliox appeared to serve as a bridge to support these patients' while time and pharmacologic measures took effect and an underlying infection abated. More study is needed to understand and treat viral-related obstruction lung disease of small airways and the role of heliox.

Biography

S E Morgan is a Registered Respiratory Therapist and an Advanced Respiratory Care Practitioner with the National Board for Respiratory Care. He is an active member of The America Association for Respiratory Care. He serves as Clinical Practice and Development /Educator/ Research Coordinator for the Department of Respiratory Care Services, Section of Pulmonary and Critical Care Medicine at the UCM. He has published more than 30 peer review papers regarding subjects such as; nitric oxide, heliox, influenza-related respiratory disease and aerosolized epoprostenol) in different medical journals. He has collaborated with departments of neonatology and pediatrics on respiratory related research projects.

sherwin.morgan@uchospitals.edu

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