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Use of heliox delivered via high-flow nasal cannula to treat an infant with cononavirus enterovirus-related respiratory syndrome and severe acute air-flow obstruction

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Heliox, a helium-oxygen gas mixture, has been used for many decades to treat obstructive pulmonary disease. The lower density and higher viscosity of heliox relative to nitrogen-oxygen mixtures can significantly reduce airway resistance when an anatomic or partial air-flow obstruction is present. Respiratory infections caused by coronavirus / rhinovirus-enterovirus range from the common cold to severe acute respiratory distress syndrome (SARS). In infants, respiratory syndromes can cause bronchitis, viral bronchiolitis, and pneumonia in variable combinations and may produce enough air-flow obstruction to cause respiratory failure. These viral strains are now documented to come from multiple viral agents and continue to mutate into new strains. I present the case of a 10-month old Hispanic male treated with high flow nasal cannula and heliox to avoid intubation. Before heliox the patient was tachypnea 60 – 70 breaths/min and would desaturate to 84% as measured by pulse oximetry with suprasternal chest retractions. After heliox 70/30, his respiratory rate fell 31 to 38 breaths/min. Nutritional support was implemented on day 1 of heliox administration. He was maintained on heliox either 60/40 or 70/30 for 48 hours and heliox discontinued on day three. He was discharged from PICU on day 10 and discharged from the hospital 7 days later. The benefit of heliox itself appeared to be immediate and served as a bridge to support the patient while time and pharmacologic measures took effect and an underlying infection abated.

Biography

Sherwin Morgan completed his respiratory care training from Malcolm X College of Respiratory Care in Chicago, IL. He is an advanced respiratory care practitioner with the National Board for Respiratory Care in the United States. He is Clinical Practice and Development /Educator/Research Coordinator for the Department of Respiratory Care Services, Section of Pulmonary and Critical Care Medicine at the University of Chicago Medicine. He has published more than 25 peer review papers in multiple medical journals. He has designed, engineered, and collaborated with a number of research studies with the pulmonary medicine department.

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