PIP of 33. VV ECMO was initiated. After cannulation, it was discovered that the CO2 absorber was rendered ineffective from water saturation resulting in CO2 rebreathing. The patient was transitioned to an AVEA ventilator and PaCO2 clearance improved allowing for de-cannulation 36 hours later. **Results:** In the operating room fresh gas flows are routinely less than minute ventilation allowing for conservation of volatile anesthetic agents and heat, but requiring removal of CO2 in the expiratory limb by a soda lime absorber. In our patient, continuous albuterol and circuit humidification resulted in filling of the soda lime canister with water. This allowed the exhaled CO2 to bypass the soda lime, re-enter the inspiratory limb, and ultimately be re-breathed. Several logistic issues must be considered to ensure the safe and effective delivery of volatile anesthetic agents outside of the operating room setting. The recent release of ICU ventilators specialized to deliver volatile anesthetic agents should help mitigate some of these issues.

1891

NEURALLY ADJUSTED VENTILATORY ASSIST WEANING OF NEONATES WITH CONGENITAL DIAPHRAGMATIC HERNIA

Adam Szadkowski, Michael Wilhelm, Jamie Limjoco, David Mcculley, Chuck Leys, Yousef AlAli, Awni Al-Subu

Learning Objectives: Neurally adjusted ventilator assist (NAVA) has been shown to improve synchrony by adjusting inspiratory pressures in response to the electrical activity of the diaphragm (EAdi) during mechanical ventilation. Neonates with congenital diaphragmatic hernia (CDH) are at increased risk for ventilator asynchrony and worsened respiratory function as a result, and would appear to be ideal candidates for NAVA for this reason. However, there is limited data about NAVA in this setting and potential concerns about the ability to obtain good EAdi signals. **Methods:**Herein we report on three cases of CDH in which NAVA was used both invasively and non-invasively. The mean gestational age was 37 weeks and 100% were males. One patient had a right-sided anterior CDH, while the other two were large left-sided CDHs. All patients were intubated immediately after birth and started on SIMV pressure control. Mean time to surgery was 7 +/- 1 days. All patients were repaired via open laparotomy with either a gortex patch closure or muscle flap. Patients were transitioned to invasive NAVA 15 +/- 7 days post operatively as weaning was underway. EAdi signals were consistently strong with a median of 9.5 μvolts and a range of 6 -17 μvolts. The median NAVA starting level was 2.1 cm +/- 1 H2O/μvolt. Patients were extubated with a NAVA range 1.1–1.6 cm H20/μvolt to noninvasive NAVA 3 +/- 2 days after initiation of invasive NAVA. Patients were successfully weaned to room air 9 +/- 5 days after extubation. **Results:** In this series, NAVA was tolerated without deleterious effects. EAdi signals were consistently strong and patients were easily transitioned from conventional pressure control ventilation strategies. The major barrier to weaning appeared to be the novelty of NAVA to staff and lack of familiarity. However, the ability to transition to non-invasive ventilation may have shortened the period of intubation. NAVA appears to be a useful mode of ventilation both invasively and non-invasively in CDH patients, particularly given the primary focus on minimizing ventilator-induced lung injury.

1892

VENTILATOR AUTOTRIGGERING IN A PATIENT FOLLOWING MASSIVE INTRACEREBRAL HEMORRHAGE AND BRAIN DEATH

Richard Arbour, Chet Morrison

Learning Objectives: Ventilator autotriggering may potentially occur following terminal brain stem herniation due to interaction between a hyperdynamic cardiovascular state consequent to massive catecholamine release and high stroke volume interacting with compliant lung tissue causing cyclic gas movement within the patient-ventilator system. This can be mistaken for spontaneous efforts at breathing. As a consequence, cardiogenic autotriggering may go unrecognized, thus delaying brain death testing, prolonging the ICU experience for families, restricting donor organ availability and affecting transplant recipient outcomes. This may also confuse and promote conflict among families and clinicians caring for these patients **Methods:** A 68 year-old patient was admitted to a trauma/neuro ICU with massive, intracerebral hemorrhage and declining neurological examination. He was intubated with initiation of controlled ventilation and experienced a hyperdynamic cardiovascular state with clinically evident marked elevation in intracranial pressure. Appropriate medical therapies were administered for reduction of presumed intracranial hypertension. Signs of terminal brain herniation were noted on ICU day 1. Brain death testing was delayed due to patient overbreathing the ventilator set rate for 9 hours following loss of all brain and brainstem function. Repeat clinical evaluation in context with ventilator graphics analysis revealed flow waveform oscillations exactly matching heart rate and exceeding flow trigger threshold. Waveform deflections indicating intrinsic respiratory drive were absent. Pressure triggering with threshold at -2 cm H20 was initiated, eliminating autotriggering. Brain death testing proceeded and the patient was pronounced dead. **Results:** cardiogenic autotriggering may go unrecognized and erroneously lead to delay in brain death testing. This phenomenon has not been explored by controlled study and there are only limited case reports available. When patients are encountered as described, immediate ventilator graphic analysis should be performed and appropriate adjustments made to triggering.

1893

VENOVENOUS EXTRACORPOREAL MEMBRANE OXYGENATION FOR REFRACTORY STATUS ASTHMATICUS: A CASE SERIES

Brian Rissmiller, Brian Young, Matthew Musick, Lara Shekerdemian, Maria Gazzaneo

Learning Objectives: Life threatening asthma is a serious medical condition that often leads to profound hypoxemia, hypercapnia, and altered mental status. Mechanical ventilation (MV) is often required to manage asthmatic patients who deteriorate despite aggressive management; MV is not uniformly successful and additional therapies should be evaluated. ECMO is an alternative strategy, but there are limited reports of VV-ECMO use in the pediatric literature. **Methods:** We describe a case series of 4 pediatric patients (2–11 years old) who were admitted for severe status asthmaticus unresponsive to standard therapies including continuous albuterol, volume resuscitation, corticosteroids (4 mg/kg/day), ketamine, terbutaline, BiPAP, MV, and inhaled anesthetics (isoflurane, mean MAC 1.6 ± 0.5, mean duration 8 ± 1.5 hrs, n=4) which required VV-ECMO, 3 bicaval (Avalon), and 1 right IJ-femoral cannulae. Pre-ECMO, the average peak pH was 6.9, PaCO2 was 115 on MV (mean 14 ± 6.7 hrs) with mean maximum peak inspiratory pressure (PIP) of 45 ± 7.7. At 4 hours post cannulation, these parameters had improved to mean pH 7.2, mean PaCO2 of 68 on a pressure control mode of ventilation with mean PIP of 26 ± 4.2. ECMO flows ranged from 55 to 110 ml/kg/min with a mean max flow 87 ± 20 ml/kg/min and a mean maximum sweep of 1.5 ± 0.5. All patients were successfully decannulated from ECMO after an average of 54 ± 14 hrs, and all patients survived to hospital discharge. Average hospital LOS was 9 ± 0.8 days, average ICU LOS was 6.5 ± 1 days. Post ECMO mean duration of MV was 25 ± 26 hrs and mean time to room air was 85 ± 33 hrs. Complications for these patients included vasoactive support prior to ECMO; 1 chest tube was placed for pneumomediastinum, and 1 patient developed new onset seizure activity but did not require medication on hospital discharge. **Results:** This small case series supports the use of VV-ECMO in children with life threatening asthma. ECMO may be used safely in patients with life threatening asthma who require mechanical ventilation and may decrease risk of barotrauma and volutrauma associated with mechanical ventilation.

1894

PULMONARY EMBOLISM IN A CHILD WITH ARDS SECONDARY TO FOREIGN BODY ASPIRATION

Magalie Caudron, Tanya Holt

Learning Objectives: Acute respiratory distress syndrome (ARDS) and pulmonary embolism are rare pediatric disorders associated with high mortality rates. Here we report a case of pulmonary embolism in a child with ARDS secondary to foreign body aspiration. **Methods:** An 18 month old boy was admitted following rigid bronchoscopy and failed foreign body removal. He developed severe ARDS (oxygenation index, OI = 28) within 72 hours of admission. He was treated with lung protective ventilation, prone positioning, corticosteroids, and antibiotics and he temporarily improved. However, his oxygenation once again deteriorated (OI = 21) and he developed elevated alveolar dead space fraction (AVDSf = 0.25). A trial of