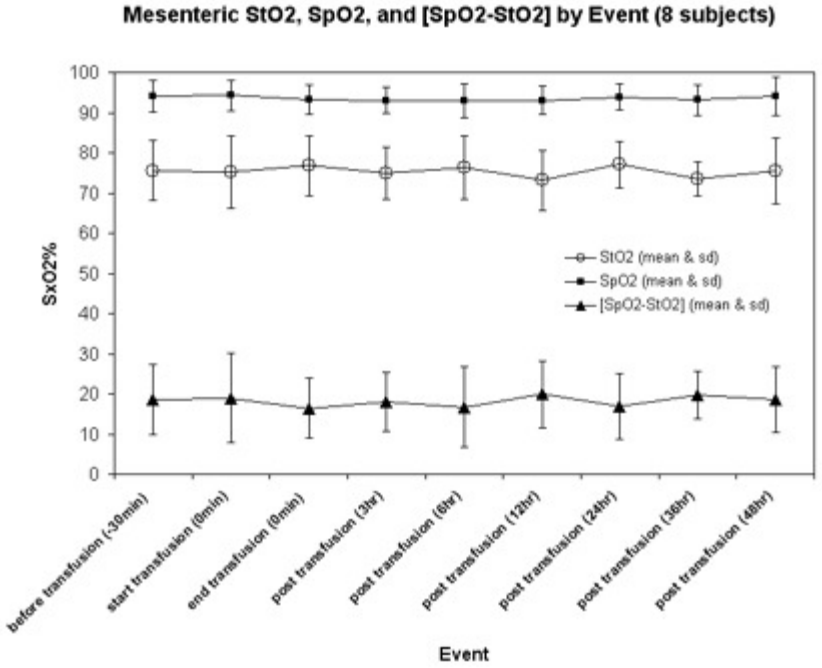
[3851.639] Monitoring Mesenteric Tissue Oxygenation with Near-Infrared Spectroscopy (NIRS) during Packed Red Blood Cell Transfusion in Preterm Infants

Lee T. White, Mariam M. Said, Khodayar Rais-Bahrami. Neonatology, Children's National Medical Center, Washington, DC.

BACKGROUND: Premature infants must adapt to extra-uterine life during a period when many organ systems are not fully matured such as the gastrointestinal (GI) system. This immaturity predisposes the infant to the development of necrotizing enterocolitis(NEC). Several recent retrospective studies have associated packed red blood cell (PRBC) transfusion with development of NEC likely though a perfusion/reperfusion injury.
OBJECTIVE: To monitor for altered mesenteric tissue oxygenation using NIRS during PRBC transfusion.
DESIGN/METHODS: We used a 4-wavelength NIRS device (FORE-SIGHT , CASMED, Branford, CT USA) to monitor infants' mesenteric tissue oxygen saturation (StO2). A NIRS sensor was placed on the right, lower, abdominal quadrant one hour prior to PRBC transfusion for baseline then continued for 48 hours post transfusion. Pulse oximetry SpO2 data was collected simultaneously with StO2 data, with the SpO2 - StO2 difference calculated to normalize for hypoxic episodes. All data was averaged in 30 minute windows for events before, during, and post transfusion. Time and area under different StO2 thresholds (TUT & AUT) were also determined.
RESULTS: 8 neonates with gestational age of 25-32 weeks and weighing 1.3-1.94 kg were studied. The PRBC transfusion period was 3-5 hours. One subject had NEC located primarily in the left lower abdomen, opposite side of the sensor placement. Our results showed no prolonged changes for StO2, SpO2, and SpO2-StO2 difference for any subject. However, TUT & AUT analysis showed that StO2 briefly dropped below 65% often, where the highest TUT & AUT values occurred for NPO, lowest HCT, and NEC subjects.



CONCLUSIONS: It is known that the causes of NEC are multifactorial with ischemia or hyperoxemia being potential causes. Our initial results do not show prolonged mesenteric ischemia or hyperoxemia events post blood transfusion. However, there were many transient mesenteric StO2 drops indicating brief oxygen deficits, possibly due to transient hypoxia events.
First Author is a Fellow in Training
E-PAS2012:3851.639

Session: Poster Session: Neonatology - General (4:15 PM - 7:30 PM)
Date/Time: Monday, April 30, 2012 - 4:15 PM
Room: Exhibit Halls A/B - Hynes Convention Center

Board: 639
Course Code: 3851

Close Window