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Case spotlight

INVOS™ Cerebral/Somatic Oximetry

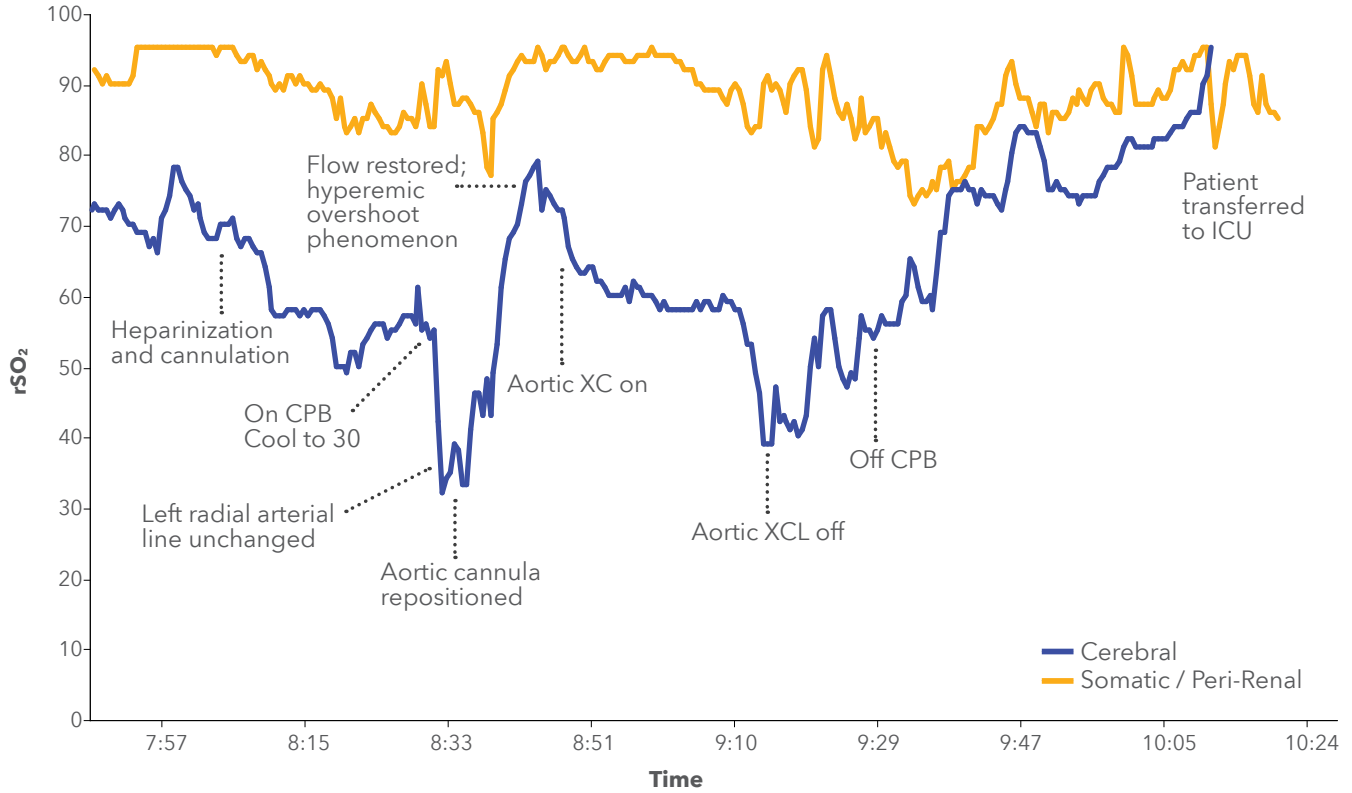
Congenital surgical procedure

Cannula position during atrial septal defect (ASD) repair: the effect on cerebral rSO_2

Introduction

Atrial septal defect (ASD) is a congenital heart defect. In utero there is normally an opening in the wall (septum) of the heart that separates the upper chambers of the heart (atria) to allow blood to flow around the lungs. This opening (foramen oval) enables oxygenated blood returning from the placenta to be shunted away from the lungs, directed to the left side of the heart and delivered to the rest of the body. After birth, this mixing of blood can result in poor oxygen delivery to the body and brain. Small atrial septal defects usually cause very few problems and are often discovered later in life.

Surgical repair of an ASD is a common procedure. However, the procedure is invasive and requires the patient to be placed on cardiopulmonary bypass, which carries inherent risks.



Case

This case study is about a toddler who required surgical repair of ASD. Two-channel regional oximetry was used to monitor cerebral and right perirenal somatic sites. Both the cerebral and perirenal sites showed normal values and normal trending relationships. Shortly after initiating CPB, both cerebral and somatic rSO_2 values decreased during isolation and cannulation of the major vessels. An acute cerebral desaturation was also identified shortly after initiating CPB. Cannula positions were checked before continuing with the procedure. After four minutes of cerebral desaturation, the arterial cannula was repositioned. The patient's blood pressure remained unchanged during this event. The reposition of the cannula resulted in an immediate increase in the cerebral rSO_2 values. Two-site monitoring of both cerebral and somatic rSO_2 values were within normal range at the conclusion of the procedure.

In this case report, cerebral oximetry using the INVOS™ cerebral/somatic oximeter provided the first alert that there was disruption to cerebral blood flow. Monitoring cerebral oximetry provided the only alert to the mechanical obstruction of brain blood flow caused by cannula position in the aorta. The INVOS™ system's regional oximetry value was an early indicator that cerebral perfusion was compromised.

The INVOS™ monitoring system should not be used as the sole basis for diagnosis or therapy and is intended only as an adjunct in patient assessment. Reliance on the INVOS™ system alone for detecting cerebral desaturation events is not recommended.

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