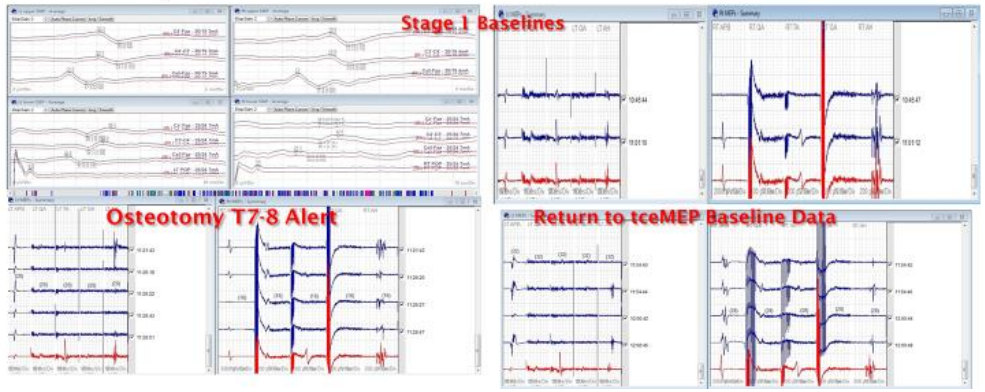
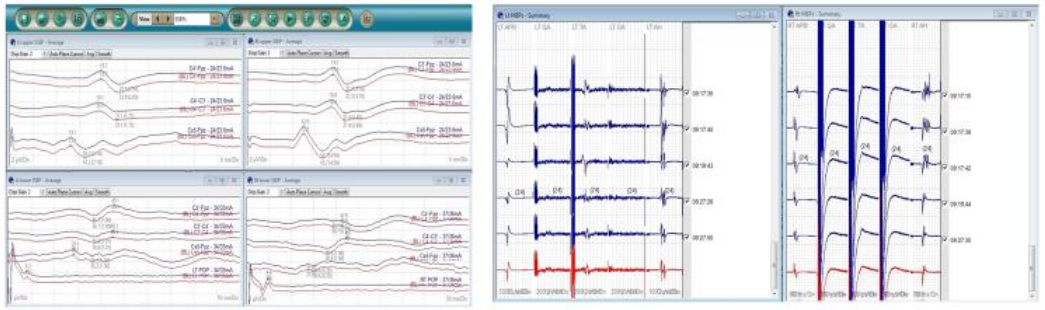
Changes in Neuromonitoring Data Resulting from Spinal Cord Perfusion

Maria Zuccaro PhD, CNIM and James Zuccaro, DC, DABNM

- **History:** The patient was a 12-year old female with a past history of scoliosis, cervical syrinx, and Chiari I malformation. Physical exam was obtained per medical records and indicated grossly intact upper and lower extremities. Imaging studies revealed 106-degree scoliosis in the thoracic spine. A three stage posterior spinal fusion of levels T2 to L4, with multiple Ponte's osteotomies and halo placement was to be performed.

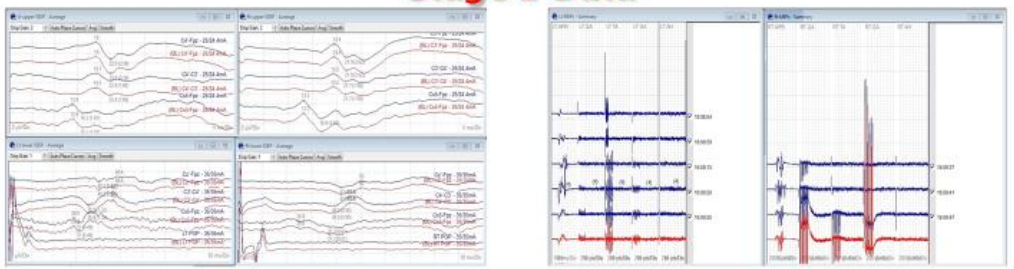


Stage 3 Data



- Post-Operative: All data returned to baseline prior to closing of stage 1 and the patient was able to move all extremities with 5/5 muscle strength upon waking. However, within 48-hours post-surgery, during recovery in the intensive care unit, cessation of dopamine infusions was performed and the patient's mean arterial pressure was reduced from 90-to 72-mm of Hg for approximately 3-hours. This resulted in the patient developing progressive neurologic symptoms and muscle strength was assessed at 0-1/5 bilaterally on the lower extremities. An MRI was performed and a questionable lesion was observed. This questionable lesion resulted in an emergency laminectomy from T5 to T10.

Stage 2 Data



Conclusions/Implications

- Dopamine elevated the MAPs and the patient was able to engage in muscle contraction. No identifiable lesion was found during the laminectomy. Therefore, decreasing dopamine may be considered a factor that influenced arterial hypotension and resulted in progressive myelopathy. This theory is consistent with the conclusions from Schmidt (2006).
- Dopamine was discontinued 48-hours post injury, MAPs were reduced from 90mmHg to 72mmHg for 3-hours, and the patient developed progressive neurological symptoms. Current literature suggests MAPs of a spinal cord injury patient be elevated over 80mmHg for a time frame of 7-days (Ahn, H. & Fehlings, M. G., 2008; Markandaya, Stein, & Menaker, 2013).
- Lastly, in contrast, no real consensus for optimal arterial pressure for spinal cord injury exists among neuroanesthesits in the United Kingdom. However, one limitation of this study was a low response rate (i. e. 36%). (Werndle, M. C., Zoumprouli, A., Sedqwick, P., & Papadopoulos, M. C., 2012).
- REFERENCES:

  - Ahn, H. & Fehlings, M. G. (2008). Prevention, identification, and treatment of perioperative spinal cord injury. Neurosurgical Focus, 25(5): E15. doi: 10.3171/FOC.2008.25.11.E15.
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  - Schmidt, B. J. (2006). Subacute delayed ascending myelopathy after low spine surgery: Case report and evidence of a vascular mechanism. Spinal Cord, 44(5), 322-325.
  - Werndle, M. C., Zoumprouli, A., Sedqwick, P., & Papadopoulos, M. C. (2012). Variability in the treatment of acute spinal cord injury in the United Kingdom: Results from a national survey. Journal of Neurotramua, 29(5), 880-888.