

Abstract Title: Use of Bedside Cerebral Blood Flow Monitor to Determine the Timing of Brain Death Evaluation

Introduction: Timing of brain death evaluation could be crucial in maintaining organ perfusion for donation. A new bedside cerebral blood flow monitor (cFLOW monitor from Ornim) has not been previously studied for determining the timing of brain death examination.

Methods: We present here a case illustrating the role of bedside blood flow monitoring in determining the timing of brain death evaluation.

Results: A 73 year-old-woman presented with acute right middle cerebral artery stroke and bilateral internal carotid artery occlusions. She was not a candidate for intravenous thrombolysis or endovascular therapy due to unknown time of symptoms onset. Her initial NIHSS was 19 (right gaze deviation, mild aphasia, mild dysarthria, left facial droop, left hemiparesis, left sided decreased sensation and neglect). Day-2, she got intubated for hypoxic respiratory failure. Day-3, CT head showed cerebral edema with midline shift of 8 mm. Patient was not a decompressive hemicraniectomy candidate. Day-5, patient was comatose. Day-7, patient lost bilateral pupillary reflex. CT head showed worsening midline shift of 17 mm with right uncal herniation, bilateral anterior cerebral artery and left posterior cerebral artery stroke, and brainstem compression. Day-9, bedside cerebral blood flow monitoring was started with right sided cerebral blood flow index (CFI) of 16 and left side CFI of 35. Patient met criteria for brain death except that she was still breathing over the ventilator. Patient was extubated for comfort measures. After 60 minutes patients stopped breathing. Her CFI dropped <10 bilaterally. Patient underwent cardiac arrest after 10 minutes and then both CFI were <8. Patient was not a candidate for organ donation.

Conclusions: Bedside cerebral blood flow monitoring may assist in determining the timing of brain death evaluation in comatose patients with imminent brain death. Patients with CFI <10 may be considered for brain death evaluation. Our finding needs further confirmation.