



Overdoses and Organ Donation: Barriers to Salvaging Good from Tragedy

Shahram Ahari, MD; Timothy J. Wiegand, MD

Background

- Several drugs known to mimic brain death in overdose have led to confused prognoses and unintended harm.
- We present three fatal opioid poisoning that, but for the addition of a Cerebral Perfusion Study (CPS), would have delayed pronouncement of death and undermined organ donation.

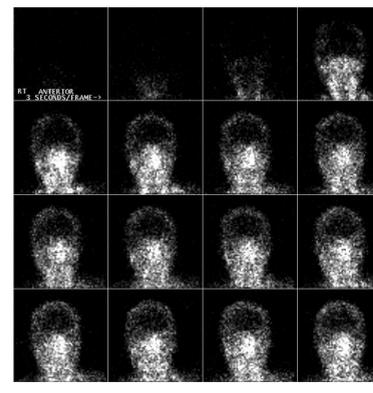
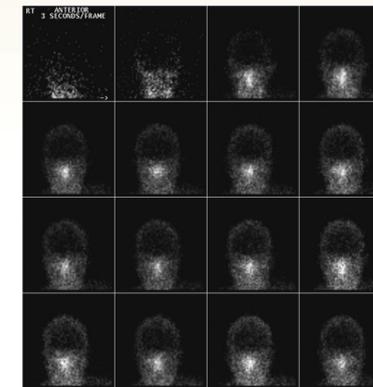
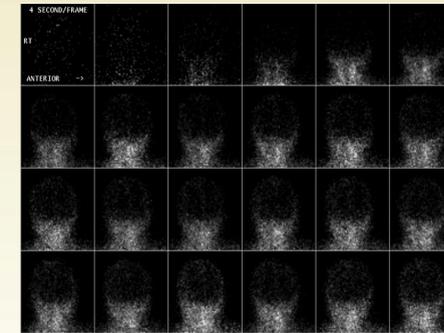
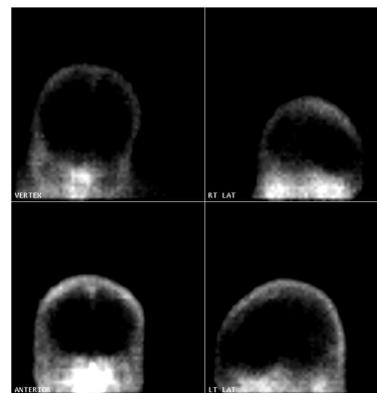
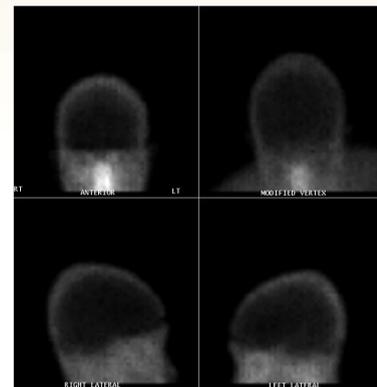
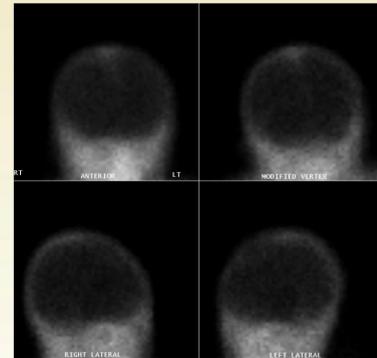
Hypothesis

- There is limited predictive value in a generalize brain death criteria that is restricted to:
 - Irreversible and unresponsive coma
 - Absence of brainstem reflexes
 - Apnea
- CPS can ultimately hasten diagnosis and reduce the potential catastrophic harm in drug overdose either through premature organ donation, or by preventing delay from pending drug concentrations.

Case Study (three patient chart review)

- Three patients with accidental opioid exposure were found comatose and with respiratory failure:
 - A) An 8 month-old boy who ingested morphine pills
 - B) A 16 year-old girl with a mixed ingestion including Percocet
 - C) A 28 year-old man with a heroin addiction, recently released from prison, who injected heroin
- All had severe anoxic injury and deteriorated over 24-48 hours becoming increasingly difficult to support.
- Formal brain-death exams met state criteria for brain death (see discussion) however families were hesitant to allow organ procurement until they were reassured drug intoxication was not blunting response during the death exam.
- In each patient a CPS demonstrated a lack of perfusion ultimately facilitating brain-death diagnosis and organ donation.

PET/NM Cerebral Perfusion Studies of an Infant, Teen, and Adult



Discussion

- The medical literature include reports where various types of drug overdose mimicked brain death.
- State criteria for determining brain death typically include a formal neurologic exam, lack of patient response to ventilatory drive off sedation (i.e. 15 mmHg increases in PCO₂) and optional EEG.
- Additionally, in overdoses, it is suggested brain-death not be diagnosed until toxic drug concentrations are absent.
- Determining drug concentrations however often take significant time potentially undermining continued stability and compromising procurement of viable organs for transplantation in applicable cases.

Limitations

- Single case report
- Retrospective in nature

Conclusion

Cerebral perfusion study may provide us with a more efficient way to ascertain patient death in overdose victims when drug toxicity mimics brain death.

