Spontaneous Pneumocephalus in a Patient with Cardiac Arrest

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A 28-year-old male with a history of polysubstance use was admitted with cardiac arrest due to asystole. He was last known to be in his usual state of health about half an hour prior to the arrival of emergency medical personnel. Return of spontaneous circulation was achieved after an hour of cardiopulmonary resuscitation. Laboratory testing revealed acute kidney injury and severe anion gap metabolic acidosis as well as respiratory acidosis. Urine drug screen was positive for cocaine, opiates and ethanol. A computed tomography (CT) scan of the head without contrast (Panel A) revealed diffuse foci of intra-cranial air in the infra temporal fossa and the subarachnoid space. There was no evidence of traumatic injury to the head/face or history of attempted nasotracheal intubation. CT angiogram of the head performed four days later to confirm brain death (Panel B) once again revealed extensive intra-cranial air. Pneumocephalus has been reported to occur following neurosurgery, craniofacial trauma or CNS/otogenic infections. Other etiologies include anatomic abnormalities in the mastoids, middle ear or sinuses as well as increased extracranial pressure due to Valsalva maneuver, coughing/sneezing, altitude changes and scuba diving [1,2]. We hypothesize that this may have been caused by trauma to the cribriform plate while inhaling cocaine and heroin given the absence of other injuries or infection.

Panel A

Panel B

Bibliography


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