

Brainstem stroke presenting as cardiac arrest: a reversible diagnosis not to miss

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Background

Cardiac arrest is a common ED presentation, but brainstem infarction as the underlying cause is rare and often overlooked. Basilar artery occlusion (BAO) results in dizziness, nausea, cranial nerve palsies, respiratory failure, and coma. These signs are frequently missed as patients present unresponsive. Although rare, BAO is potentially reversible. We report a case of cardiac arrest due to BAO, where early suspicion led to successful reperfusion.

Case Presentation

A 63-year-old man with hypertension, diabetes, and prior lacunar infarction collapsed moments after complaining of nausea. EMS found him comatose (GCS 3). During transport, he developed bradypnea and bradycardia, progressing to pulseless electrical activity (PEA) upon ED arrival. He was intubated immediately, and ROSC was achieved after one cycle of epinephrine (1 mg). Arterial blood gas analysis revealed profound hypercapnic acidosis (pH 6.99, PaCO₂ 103 mm Hg). Point-of-care ultrasound showed preserved cardiac function.

Non-contrast head CT showed no hemorrhage. Contrast-enhanced CT ruled out aortic dissection and pulmonary embolism. CT angiography, however, revealed basilar artery occlusion. Mechanical thrombectomy was initiated within 3 hours of first contact, achieving near-complete reperfusion in a single pass. Spontaneous breathing resumed immediately. MRI performed the following day revealed infarctions extending from the pons to the medulla, involving the bilateral AICA and PICA territories. The patient was extubated on day 5. Upon transfer, he followed commands despite mild residual impaired consciousness and quadriparesis.

Conclusion

In unexplained cardiac arrest - particularly with non-shockable rhythms and no evident cardiopulmonary etiology - physicians must consider brainstem infarction. BAO should be part of the differential diagnosis, especially when prodromal nausea precedes arrest or when severe hypercapnia is present. Early recognition through head-and-neck CT angiography enables timely reperfusion, offering a chance for survival. Delayed diagnosis results in missed opportunities for intervention.

Keywords: Resuscitation, basilar artery occlusion.