Straight to the Dome - Cefepime Induced Neurotoxicity

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Introduction: The commonly used cephalosporin, Cefepime, has been reported to cause encephalopathy at an incidence rate of up to 14.3%. This neurotoxicity is highly dependent on route of administration, continuous versus intermittent dosing, renal function, and patient population (1-2).

Case presentation: An 80-year-old male with no history of kidney disease presented to the emergency department as a stroke alert. The patient had a history of chronic back pain requiring multiple surgeries complicated by cerebral spinal fluid cultures growing Pseudomonas Aeruginosa. The patient was started on intravenous Cefepime one month prior to admission. Magnetic resonance imaging of the brain revealed no intracranial abnormalities nor signs of cerebral vascular accident. The patient was hemodynamically stable and noted to have stage 3 acute kidney injury. Electroencephalogram (EEG) revealed myoclonic seizure activity. The diagnosis of Cefepime induced neurotoxicity was made as the patient was on the standard dose of Cefepime in the setting of worsening renal function. The patient was transferred to the intensive care unit for emergent dialysis followed by continuous renal replacement therapy (CRRT). Subsequently, mental status continued to improve with resolution of seizure activity on EEG.

Discussion: Cefepime induced neurotoxicity (CIN) should be considered a diagnosis of exclusion requiring high clinical suspicion and pertinent history. EEG findings are typically characterized by generalized periodic discharges with triphasic wave or nonconvulsive status epilepticus (3). Patients with impaired renal function are at an increased risk of CIN due to reduced clearance. Hemodialysis effectively removes Cefepime due to its pharmacologic properties including low protein binding and low

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molecular weight. The symptoms of CIN can last up to 2-3 days in patients with severe kidney injury without dialysis (4).

Keywords: Cefepime, Neurotoxicity

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