

CHARACTERIZING CEFEPIME NEUROTOXICITY: A SYSTEMATIC REVIEW

Ayesha Appa, MD¹; Rupali Jain, PharmD²; Robert Rakita, MD²; Shahin Hakimian, MD³; Paul Pottinger MD²

¹ University of Washington, Division of General Internal Medicine; ² University of Washington, Division of Infectious Diseases; ³ University of Washington, Department of Neurology

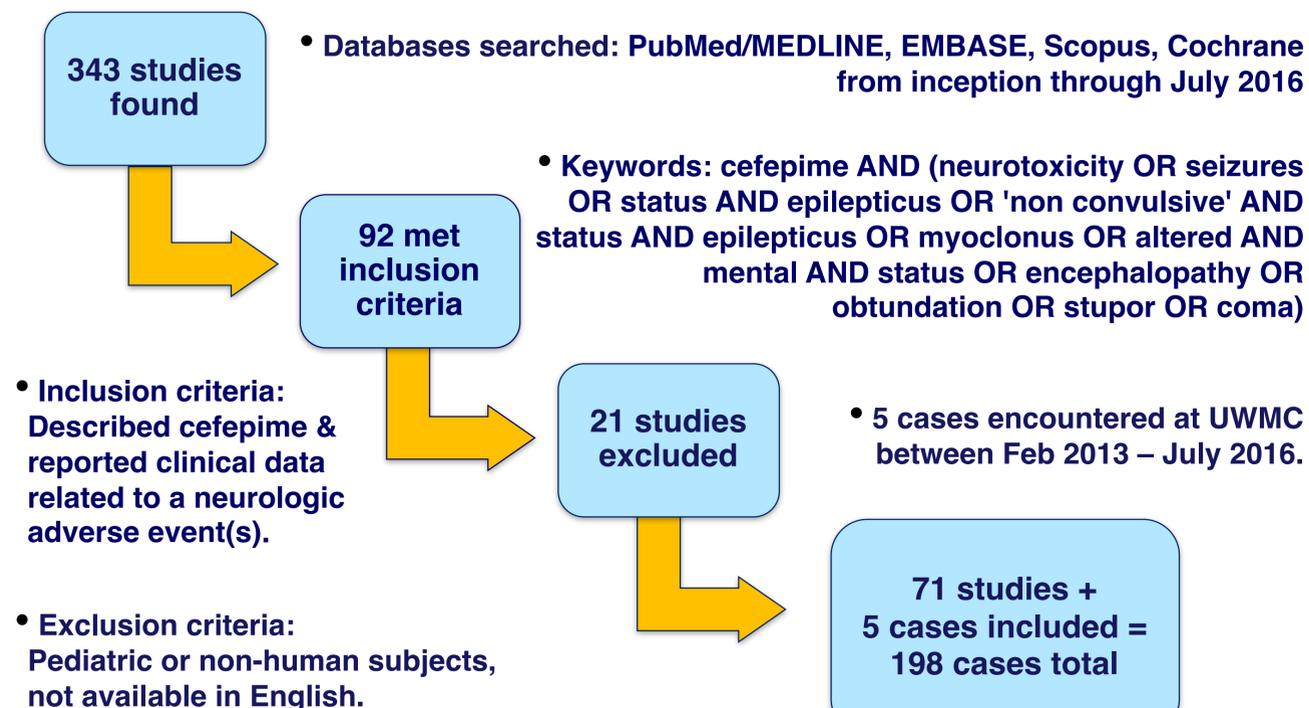
BACKGROUND

- Cefepime is a 4th generation, parenteral cephalosporin: commonly-used to treat neutropenic fever, healthcare-associated pneumonia, and other MDR infections in the hospital setting.
- Initial studies suggested a favorable safety profile, but this has been called into question in recent years, especially in light of increasing evidence of neurotoxicity.
- Cefepime neurotoxicity is a heterogeneously described clinical entity, which may lead to delay in diagnosis or under diagnosis.

Objective:

To provide clinicians with an evidence-based framework with which to recognize cefepime neurotoxicity.

METHODS



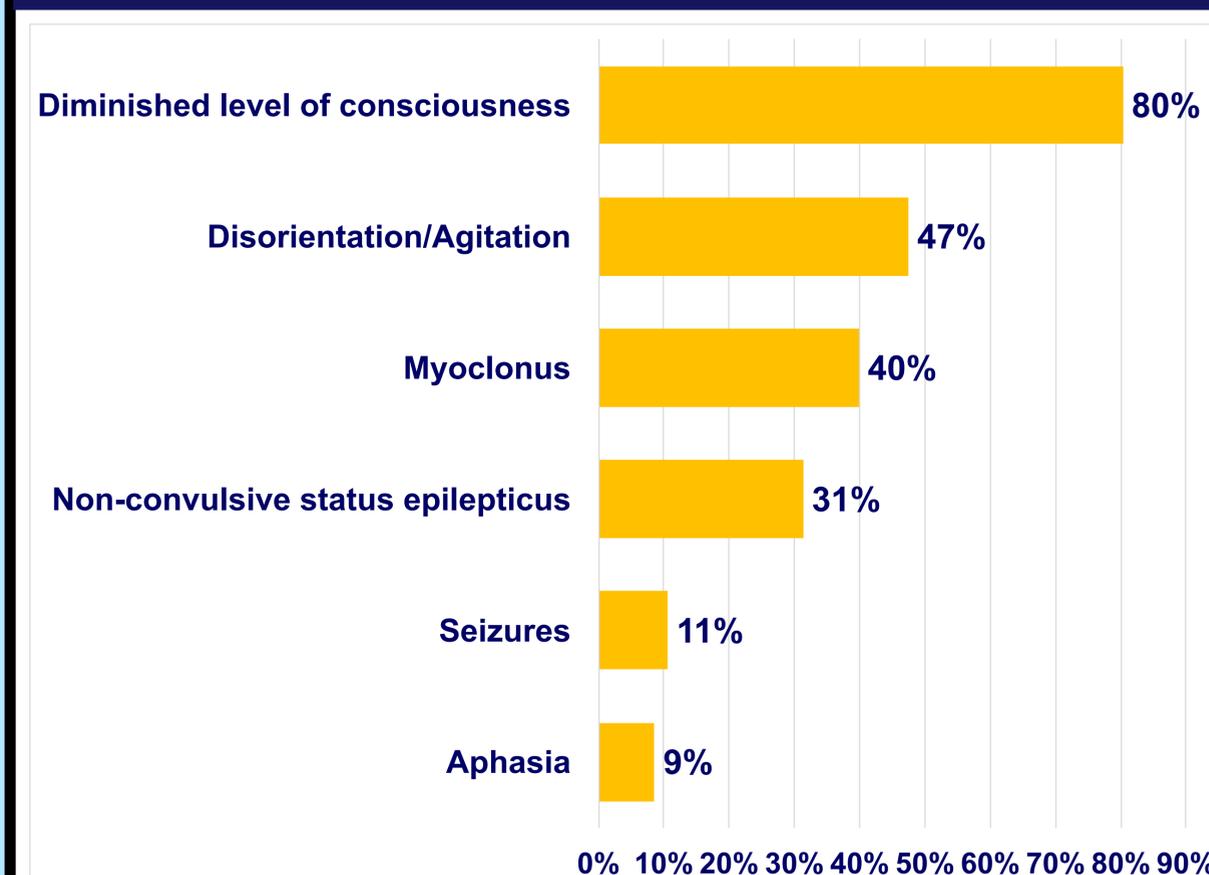
Analysis: Demographic & clinical information abstracted, then descriptive & summary statistics employed.

RESULTS

Demographic & Clinical Characteristics

	N=198
Mean age (+/- SD)	67 (+/- 13)
Female sex, %	51%
Renal dysfunction**, %	87%
ESRD, %	29%
Median cefepime dose per 24 hours, g (+/- SD)	4 (1.8)
Appropriate renal dosing of cefepime, %	50%
Mean onset after cefepime start, days (+/- SD)	5 (4)
Electroencephalogram (EEG) performed, %	81%
<i>Treatment</i>	
Anti-epileptic drugs used, %	33%
Hemodialysis used, %	14%
Mortality During Hospital Stay	13%

Prevalence of Signs & Symptoms in Cefepime Neurotoxicity



CONCLUSIONS

- Cefepime neurotoxicity should be considered in older patients with renal dysfunction and new onset altered mental status and/or myoclonus.
- Additionally, non-convulsive status epilepticus (NCSE) was considerably more prevalent than previously reported, so providers may consider early EEG in an appropriate clinical context.
- Ultimately, diminished level of consciousness, disorientation, myoclonus, and NCSE may represent one continuum of encephalopathic disease due to cefepime, but further study is needed to better understand pathogenesis as well as morbidity and mortality implications.