THERAPEUTIC DRUG MONITORING OF CEFEPIME AND CEFTAZIDIME IN CRITICALLY ILL PATIENTS: A KEY TOOL FOR PREVENTING HIDDEN NEUROTOXICITY

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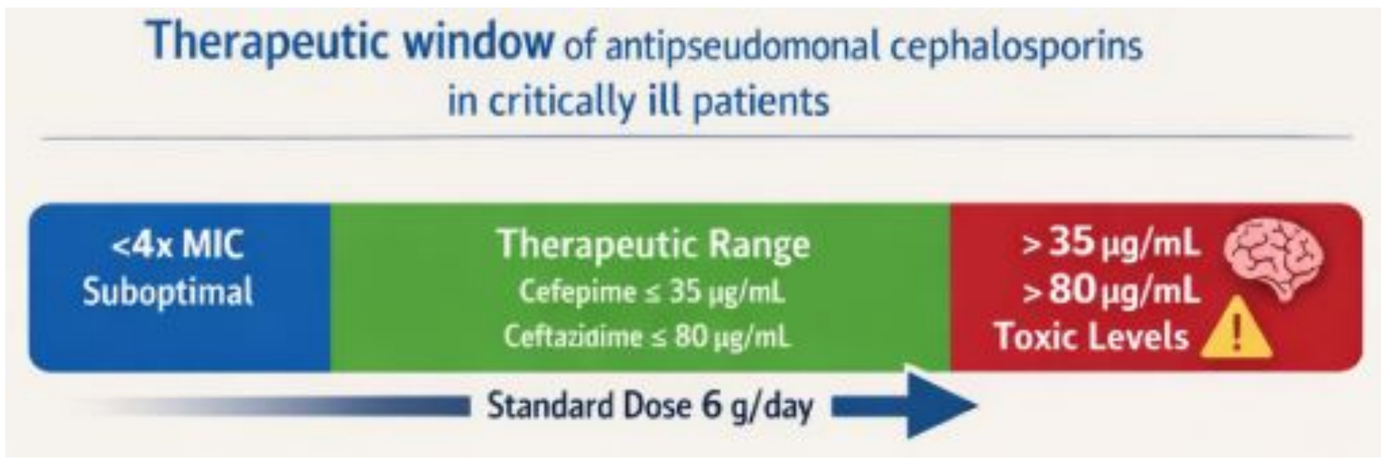
BACKGROUND AND IMPORTANCE

Cefepime- and ceftazidime-induced neurotoxicity is an underdiagnosed adverse effect in critically ill patients, particularly in those under sedoanalgesia.

Therapeutic drug monitoring (TDM) enables the identification of supratherapeutic plasma concentrations that can guide therapy optimization and prevention of neurotoxicity.



AIM AND OBJECTIVES

- To describe the relevance of antipseudomonal cephalosporins TDM to achieve PK/PD targets whilst detecting drug related neurotoxicity in critically ill ICU patients.

MATERIAL AND METHODS

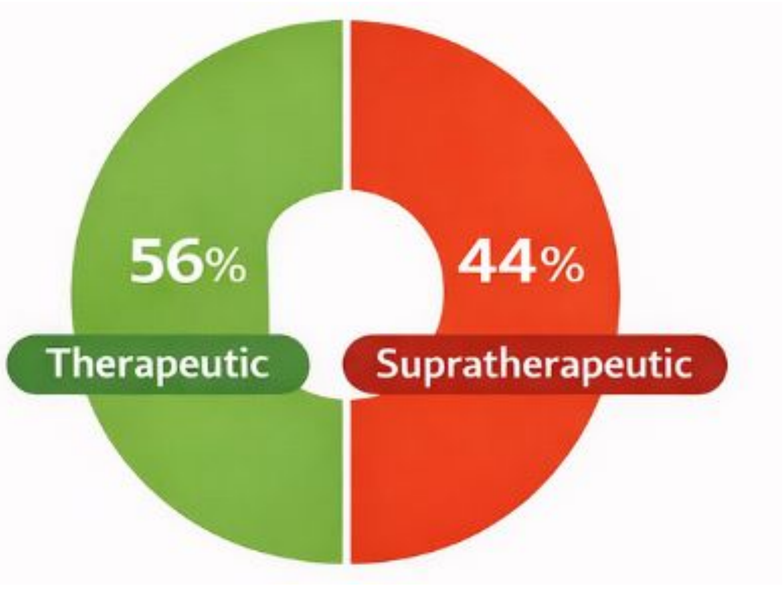
Retrospective, single-center study conducted over 9 months (January-September 2025) in an intensive care unit.

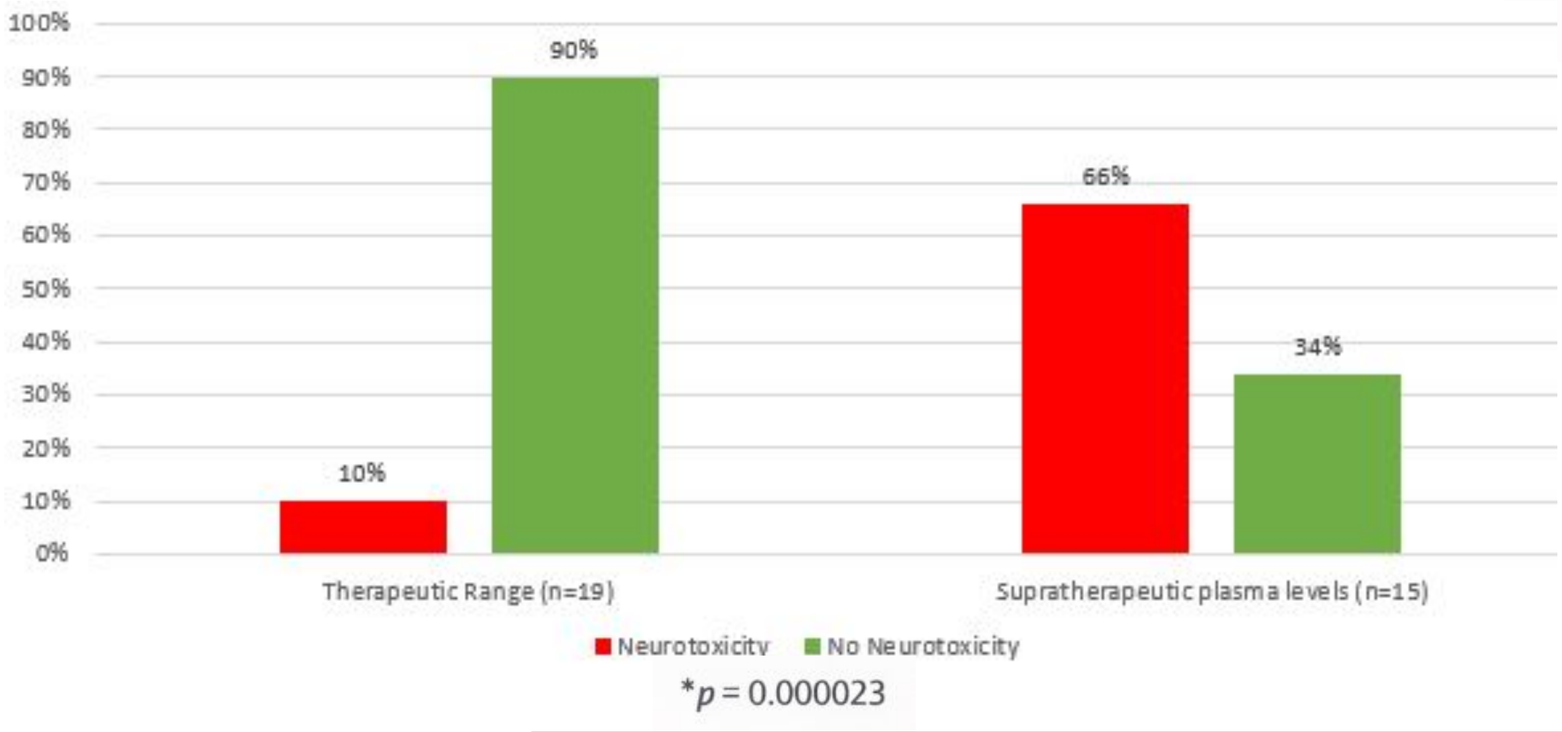
Baseline demographic and clinical data were collected, including age, sex, type of therapy.type of infusion,causative microorganism if known, antibiotic choice, treatment regimen, plasma levels and neurotoxicity symptoms.

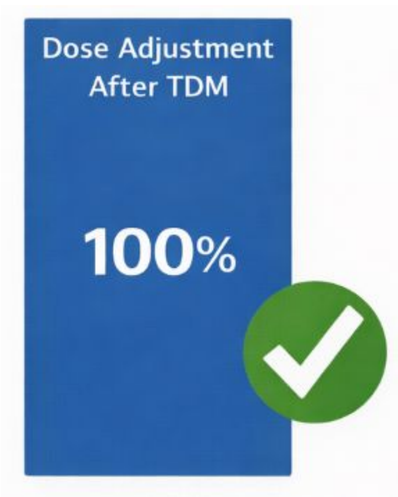
Outcome included dose adjustments following TDM, and its correlation with neurotoxicity symptoms.

RESULTS

Patients included: n=34	
Mean age	64 years [28-79]
Sex	Male: 82 % (n=28)
	Female: 18% (n=6)
Type of infusion	24h Continuous infusion: 94% (n=32)
	3h extended infusion: 6% (n=2)
Type of therapy	Empiric: 68% (n=23)
	Directed: 32% (n=11)







CONCLUSION AND RELEVANCE

- Supratherapeutic plasma levels of cefepime and ceftazidime were significantly correlated with the occurrence of neurotoxicity in critically ill patients. (p = 0.000023).

- Therapeutic drug monitoring (TDM) proved to be a valuable tool to identify patients at risk and to optimize antibiotic dosing.

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4CPS-271