

Y-SITE COMPATIBILITY AND INTERACTION ANALYSIS OF ANTICONVULSANTS AND VASOACTIVE AGENTS IN CRITICAL CARE SETTINGS

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BACKGROUND

Intensive Care Units (ICUs) manage critically ill patients, often with neurological conditions requiring anticonvulsant therapy. These patients frequently require concurrent administration of vasoactive agents to maintain hemodynamic stability. The compatibility and potential interactions between these drug classes are crucial to avoid adverse events in complex clinical settings.



AIM

To define Y-site compatibilities and pharmacological interactions between anticonvulsant and vasoactive drugs, enabling their co-administration in parenteral therapy.

METHODS

A peer-reviewed literature search was conducted to evaluate Y-site compatibilities and drug interactions between anticonvulsants and vasoactive agents.

, the web applications Stabilis and Micromedex were consulted, along with the databases PubMed, Google Scholar, and drug product information (SmPCs). Drug interaction data were retrieved from UpToDate, Drugs.com, and Micromedex.

RESULTS: all results were statistically significant.

A total of 63 Y-site compatibility combinations and 98 potential drug interactions were analyzed

Anticonvulsants: phenytoin, valproate, levetiracetam, phenobarbital, lacosamide, brivaracetam, topiramate, perampanel, tiagabine, and ethosuximide.

Vasoactive drugs: adrenaline, noradrenaline, isoprenaline, dopamine, dobutamine, vasopressin, and phenylephrine.



Y-site compatibility analysis revealed:
 28 compatible pairs (44.4%)
 12 incompatible pairs (19.1%)
 23 pairs with no available information

Interaction analysis showed:
 89 combinations without significant interactions
 2 combinations requiring specific cardiac monitoring: vasopressin-lacosamide and propofol-vasopressin



CONCLUSION

Although data on Y-site compatibilities are limited, the co-administration of anticonvulsants and vasoactive agents appears to involve few clinically significant interactions. Nonetheless, a thorough pharmacological assessment is essential before parenteral co-administration. This review highlights the key role of hospital pharmacists in ICU settings to ensure the safe management of high-risk medications, especially those with a narrow therapeutic index. Clinical decisions should always consider individual risk-benefit assessments.

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