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Intravenous levetiracetam versus phenytoin in the management of status epilepticus in adults: A systematic review of randomized-controlled trials**Sanad Esmail**

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Background: Status Epilepticus (SE) represents a neurologic emergency with high morbidity and mortality if not treated promptly. Intravenous phenytoin has traditionally been used as second-line Anti-Epileptic Drug (AED) treatment, following benzodiazepines in SE, but is limited by adverse effects that include infusion-site reactions, hypotension and cardiac arrhythmias. Furthermore, as a potent enzyme-inducer, phenytoin may negate the efficacy of other drugs, thereby complicating treatment. Levetiracetam represents a more attractive second-line AED treatment as its administration is relatively straightforward (not requiring cardiac-monitoring) with a more favorable side-effect profile and has minimal drug interactions.

Aim: The purpose of this article is to systematically review the evidence-base comparing the efficacy of intravenous levetiracetam versus phenytoin as second-line AED treatment (following benzodiazepine administration) in the management of SE in adults

Methods: A literature search was performed in PubMed, EMBASE and Medline, for the search terms: Levetiracetam, phenytoin and Status Epilepticus. Articles were included for review providing they met all of the following inclusion criteria: Original research, published in the English language (up until August 2018) and Randomized-Controlled Trials (RCTs) of adult human patients.

Results: Only 3 studies met the final inclusion criteria. These encompassed a total of 196 patients, from 3 RCTs, of whom 94 were treated with levetiracetam and 102 were treated with phenytoin. All 3 trials suggested equivalent efficacies of phenytoin and levetiracetam in the termination of seizure activity within 24 hours of drug infusions.

Conclusions: There is a surprising lack of controlled clinical data comparing the efficacy of levetiracetam with phenytoin in the management of SE in adults. Furthermore, existing trials are underpowered due to their small sample sizes, which make their interpretation limited. Until further robustly designed, well powered, RCTs comparing levetiracetam with phenytoin suggest otherwise, levetiracetam may represent an attractive alternative to phenytoin in second-line AED treatment in SE in adults.

Biography

Sanad Esmail is a specialist Registrar in Neurology, currently training in the East of England. After graduating from the University Hospital of Wales in 2012 with Honors, he undertook two years of foundation training in South Wales, UK. He then completed two years of core medical training in London, with rotations in Guys & St. Thomas hospitals. HE has completed a BSc in Neuroscience at Cardiff University, as well as a Master's degree in Clinical Neurosciences at the University of Cambridge.

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