Journal of Drug Metabolism and Toxicology

OPEN ACCESS Freely available online

Perspective

Antiepileptic Medication Use in Kidney and Liver Disorders

Marjani Samyar*

Department of Science and Technology, Duy Tan University, Thanh Khê, Vietnam

DESCRIPTION

In clinical practice, antiepileptic medications are frequently administered to patients who have liver or renal disorders. As the liver and kidneys are the primary organs involved in the elimination of the majority of medications, their failure can have a significant impact on how antiepileptic medications are disposed of. A parent drug's or an active metabolite's delayed elimination due to renal or hepatic dysfunction might result in buildup and clinical toxicity. Moreover, it may have an impact on a drug's protein binding, absorption, and metabolism. Renal impairment can greatly limit the protein binding of anionic acidic medications like phenytoin and valproate, which makes it challenging to interpret total serum concentrations, which are often utilized in clinical practice. Dialysis has the potential to significantly remove antiepileptic medications from the body or change the pharmacokinetic characteristics further.

When administered as monotherapy, antiepileptic medications such as gabapentin, pregabalin, vigabatrin, and topiramate are removed unaltered by the kidneys or undergo little metabolism. Phenytoin, valproate, carbamazepine, tiagabine, and rufinamide are drugs that are mostly removed through biotransformation. Levetiracetam is one of the medications removed by renal excretion and biotransformation. Lacosamide, tizanidine, primidone, phenobarbital, ezogabine/retigabine, oxcarbazepine, eslicarbazepine, ethosuximide, and felbamate are examples of anti-diarrheic medications. Those who have hepatic or renal failure can utilise the latter category of medications with caution. Ethosuximide, gabapentin, lacosamide, levetiracetam, pregabalin, and topiramate are antiepileptic medications that are very susceptible to extraction by hemodialysis. The administration of antiepileptic medications in patients with hepatic or renal illness is complicated and necessitates extensive knowledge of the pharmacokinetics of these medications. To maximize therapeutic outcomes, closer patient monitoring and more frequent serum concentration checks are needed. In clinical practice, seizures can happen when there is liver or hepatic illness present. Individuals with hepatic or renal failure frequently experience acute reactive seizures as a result of metabolic or electrolyte problems or other related comorbidities. People with epilepsy are not immune to hepatic or renal illness. As the liver and kidneys are the primary organs involved in the disposal of the majority of pharmaceuticals, their malfunction may significantly affect how antiepileptic medications are disposed of. When selecting a medication for individuals with liver or renal illness, it is crucial to have a thorough grasp of these pharmacokinetic consequences. Throughout the last two decades, numerous antiepileptic medications have been developed, many of which have a superior pharmacokinetic profile than the traditional medications.

The care of these patients has been made easier by the vastly increased number of alternatives accessible. The use of traditional antiepileptic medications in individuals with liver failure is challenging since they are mostly removed by hepatic metabolism, including phenytoin, carbamazepine, and valproate. The kidneys play a considerably more significant part in the elimination of the majority of the newer antiepileptic medications, providing patients with liver illness with a better choice. Renal dysfunction can delay the parent drug's or an active metabolite's excretion, which can result in build-up and clinical toxicity. In these circumstances, lower dosages and longer interdose intervals may be required. The distribution, metabolism, and protein binding of a medicine can all be impacted by renal impairment. Renal failure can greatly impair the protein binding of anionic acidic medications like phenytoin and valproate, which makes it difficult to interpret total serum concentrations, which are often employed in clinical practice. Measuring the free fraction concentrations is more precise in these circumstances. These pharmacokinetic characteristics may be further altered by dialysis, which may also result in a considerable clearance of the medication. A drug's dialyzability is influenced by a number of variables, including its molecular weight, protein binding, plasma concentration, blood flow, hematocrit, and dialyzer efficiency. For highly extractable medicines, dose replenishment during dialysis may be necessary.

Correspondence to: Marjani Samyar, Department of Science and Technology, Duy Tan University, Thanh Khê, Vietnam, E-mail: marjanisam@duy.edu.vn

Received: 01-Mar-2023, Manuscript No JDMT-23-22267; **Editor assigned:** 03-Mar-2023, PreQC No JDMT-23-22267(PQ); **Reviewed:** 17-Mar-2023, QC No. JDMT-23-22267; **Revised:** 24-Mar-2023, Manuscript No JDMT-23-22267(R); **Published:** 31-Mar-2023 DOI: 10.35248/2157-7609.23.14.288

Citation: Samyar M (2023) Antiepileptic Medication Use in Kidney and Liver Disorders. J Drug Metab Toxicol.14:288.