Effect of Antiepileptic Drugs on Liver Enzymes

Thesis

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بسم الله الرحمن الرحيم

" وقل ربى زدنى علماً"

صدق الله العظيم

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To My Family

List of Abbreviations

AEDs: Antiepileptic drugs

AFB: Aflatoxin B

ALP: Alkaline phosphatase

ALT: Alanine aminotransferase

AMPA: Amino-3-hydroxy-5-methyl-isoxazole- 4-propionic acid

AST: Aspartate aminotransferase

AUC: Area under curve

BZDs: Benzodiazepines

CBZ: Carbamazepine

CI: Confidence interval

CLD: Chronic liver disease

CNS: Central Nervous System

CoA: Coenzyme A

CYP: Cytochrome P450 system

DILIs: Drug induced liver injury

EHBA: Extrahepatic Biliary Atresia

EEG: Electro-encephalogram

FBM: Felbamate

FDA: Food &Drug Administration

GABA: Gamma amino-butyric acid

GAT: GABA active transporter

GBP: Gabapentin

GGT: Gamma-glutamyl transferase

INR: International normalized ratio

LEV: Levetiracetam

LFTs: Liver function tests

LTG: Lamotrigine

MHD: Monohydroxy derivate

NMDA: N-methyl-D-aspartate

NASH: Non alcoholic steato hepatitis

NMR: Normal magnetic resonance

OXC: Oxcarbazepine

PB: Phenobarbital

PHT: Phenytoin

PRM: Primidone

SGOT: Serum glutamate oxalo-acetic transaminase

SGPT: Serum glutamic pyruvate transaminase

TGB: Tiagabine

TPM: topiramate

UGTs: Uridine glucuronyl transferases

Vd: Volume of distribution

VGB: Vigabatrin

VOD: Veno-occlusive disease

VPA: Valproic acid

ZNS: Zonisam

Abstract

Evidences reveal that antiepileptic drugs can alter liver enzymes leading to significant hepatotoxicity.

Aim: To study the effect of antiepileptic drugs on liver enzymes as a side effect.

Subjects and methods: This study was conducted on 49 patients with epilepsy (aged between 4 and 55 years) admitted to the neurology outpatient clinic at Beni Sueif University between February 2010 and June 2011. The patients were separated as group I (16 patients), treated with carbamazepine, 200-1200 mg /day; group II (16 patients), treated with sodium valproate, 200-800 mg/ day; and group III (17 patients), treated with phenytoin, 200-600 mg/ day. Serum liver enzymes aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), and serum level of antiepileptic drug were determined.

Results: Our results judged the presence of a statistically significant positive correlation between the dose/kg of Carbamazepine and the serum level of the drug, a statistically significant positive correlation between the dose/kg of SodiumValproate and AST and a statistically significant negative correlation between the duration of administration of SodiumValproate and AST. There is also a statistically significant negative correlation between the duration of administration of Carbamazepine and AST&ALP.

Conclusion: The need for obtaining baseline liver function tests is essential before starting antiepileptic therapy and regular monitoring of serum aminotransferase values that had any of the risk factors for liver damage during antiepileptic therapy. Precautions should be taken when using antiepileptic drugs in epileptic patients with pre-existing hepatic disorders, in patients using potentially hepatotoxic drugs or if signs or symptoms of hepatic impairment appear. Because little long-term hepatic follow-up is available with antiepileptic treatment, controlled studies in larger samples should be carried out to reveal the frequency and the risk factors of serious hepatotoxicity.

Key words: Antiepileptic drugs, liver enzymes, serum level and duration of administration

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