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EFFECTIVENESS OF THERAPEUTIC DRUG MONITORING OF PHENOBARBITONE IN HOSPITALIZED EPILEPTIC NEONATES PATIENTS

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ABSTRACT

The study was aimed to examine the effectiveness of therapeutic drug monitoring of phenobarbitone on neonates in a hospital setting. The data of patients were collected from Hospital Sultanah Aminah, Johor Baru and comprised of 64 TDM forms with 35 male patients and 29 female patients. The patients' demographics and pharmacokinetics were analysed to observe the pattern correlating to phenobarbitone. The data was then described by a one-compartment model. The analysis showed that there is no significant relationship between race and pharmacokinetic parameters, yet there is weak relationship between gender and some pharmacokinetic parameters. There is moderate relationship between total dose per day and clearance with r^2 value ranging from 0.2 to 0.3. Furthermore, total dose per kg is weakly correlated with clearance. The COV value of >10% showed high inter-patient variability between variables. Hence, individual monitoring is crucial to achieve the therapeutic goal of phenobarbitone regimen and to avoid toxicity.

CHAPTER 1

INTRODUCTION

Clinical pharmacokinetics can be defined as the implementation of pharmacokinetic principles to the safe and effective therapeutic management of drugs in an individual patient. The primary goal of clinical pharmacokinetics in patients' drug therapy is to enhance drug efficacy and minimizing toxicity. Strong relationship between drug concentrations and their pharmacologic responses has been developed to enable clinicians to apply pharmacokinetic principles to actual patient situations (Joseph T. Dipiro et al., 2002).

Therapeutic Drug Monitoring (TDM) has been used in the management of individual drug therapy since the early of 1970s. Pharmacokinetics principle has been implemented as part of TDM to assess drug behaviour (Touw and Vinks, 2005).

Epilepsy is a neurological disorder that is commonly characterised by recurring seizures (Roberts et al., 2012). A seizure happens due to abnormally active neurons in the brain. If the seizure involves subcortical structures deep within the brain, only then convulsions will occur, which then spread to the spinal cord and activating muscles in the body (Stimson, 2009). Seizure disorders are