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# Therapeutic Monitoring Of Antiepileptic Drugs- Benamara - The Walton Centre for Neurology and Neurosurgery

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Therapeutic monitoring currently represents a compelling alternative to rationalize therapeutic methods. The routinization of therapeutic monitoring of pharmacologically active substances have a narrow therapeutic window is indispensable. This study aims to optimize the management and monitoring of patients treated with antiepileptic drugs, in order to ensure better safety and efficacy of treatments. It is a multicenter non-interventional study in two departments: neurology and pediatrics, in university-hospital of Tlemcen. Algeria. This prospective study was conducted on a random sample of 32 epileptic patients with a sex ratio of 15/17 treated with at least Valproic acid and / or carbamazepine.

Plasma assay was carried out by enzymatic method in the homogeneous phase using a AxSYM analyzer Among the 32 patients included in the study, 29 patients were treated with valproic acid, of whom 20 patients with mono-therapy and 6 are stabilized by a combination therapy. 3 patients received a polymedication. For 47% of patients the duration of treatment was between 1 and 5 years. 15 patients were declared to be not stabilized by treatment, of whom 3 received a treatment combining three antiepileptic dugs. 34.5% of patients treated with valproic acid have plasma concentrations less than 50 mg / l while 65.5% of patients have plasma concentrations included in the therapeutic range. No patient has a higher plasma concentration 100mg / l. For 50% of patients treated with carbamazepine in bi or combination therapy, 33% had therapeutic plasma concentrations It is noted that 34.40% of the patients were under dosed

The study of the correlation between plasma levels of antiepileptic drugs and stability of epilepsy showed four different situations; patients with normal doses and stable condition (44%), patients with normal doses unstable condition (22%), underdosing patients with unstable condition (25%), underdosing patients with stable condition (9%). This study shows a debatable inefficiency of the combination of two antiepileptic drugs and a total ineffectiveness of combination of three antiepileptic drugs. It seems imperative to take effective measures to improve the management of patients with epilepsy. The existence of a unit of therapeutic drug monitoring of proximity that works on a regular basis in order to optimize treatment strategies and reduce the risk of drug interactions. Secondly, a collaborative clinical effective and efficient biological.

Monitoring of plasma or serum (or sometimes, in earlier years, whole blood) concentrations of the older antiepileptic drugs phenobarbitone and phenytoin began to come into use in the late 1960s, initially as a research procedure which seemed as if it might find a future application in the management of epilepsy. What began in a quite small and exploratory way rapidly expanded into an established analytical laboratory activity of some magnitude, probably sometimes utilized by clinicians because it was possible to do so rather than because it was clinically necessary to have the data it could provide. This expansion in monitoring occurred too quickly for the virtues and the limitations of the approach to be explored as thoroughly as they ideally should have been before the method came into widespread use. At the present time monitoring of plasma antiepileptic drug concentrations appears to be requested a little less frequently than in the recent past and to be settling into a more balanced and cost-effective pattern of use after its initial phase of exuberant utilization. Increasing numbers of more discriminating prescribers are coming to appreciate

when monitoring is likely to yield useful information, and is therefore indicated, and when it is likely to prove fruitless.

Antiepileptic drugs (AEDs) are the cornerstone of treatment of patients with epilepsy, and there are presently 27 licensed AEDs making AEDs among the most common medications for which therapeutic drug monitoring (TDM) is performed. The aim of this review is to provide an overview of the current evidence of the use and implementation of AED TDM in patients with epilepsy and other non-epilepsy conditions. The pharmacokinetic variability of AEDs is extensive, resulting in pronounced variability in serum concentrations between patients. TDM may thus be useful to individualize the treatment of patients with epilepsy and also in non-epilepsy conditions. Indications for TDM include settings where pharmacokinetic variability is anticipated (e.g. in children, the elderly, during pregnancy, and patients prescribed polytherapy resulting in drug interactions) and drug adherence. TDM contributes to provide a quality assurance of the treatment. Patient management is, therefore, best guided by the determination of individual therapeutic concentrations. Because of pharmacokinetic variability is prevalent among AEDs, TDM allows a bespoke approach to epilepsy care allowing dose adjustments based on measured drug concentrations so as to optimize clinical outcome. Future advances include the use of additional markers of toxicity and genetic variability so as to further aid individualization and optimize AED treatment.

Plasma antiepileptic drug concentration monitoring is coming to be used in a more thoughtful and critical manner. Lack of adequate knowledge of matters such as the relationship between the plasma concentrations and antiepileptic and toxic effects of the drugs, not only the newer, but also the longer established ones, in particular clinical situations, remains more important than deficiencies in analytical methodology in limiting the clinical usefulness of antiepileptic drug concentration monitoring.