Medically intractable epilepsy patients with frequent breakthrough seizures are often admitted for elective inpatient video EEG monitoring to assess response to their current anti-seizure medications (ASM)

Therapeutic drug monitoring (TDM) of ASM is routinely done during these admissions

In clinical practice, most dosing regimens for pharmacological prophylactic treatment with ASM are based on efficacy (seizure reduction) and/or tolerability (side-effects).

Benefits of routine monitoring of ASM levels during these admissions in our clinical practice is unknown

INTRODUCTION

This is a performance improvement quality research project to determine the utility of monitoring ASM level during elective admissions. We are looking to answer the following questions:

Was the ASM level normal or abnormal?
Was there a change in management?
Was there a meaningful medication change based on the level?

To achieve this Objective:

Reviewed medical charts of all elective video EEG admissions from September 2021 – December 2021.
Current literature was reviewed on Cochrane, PUBMED, and the data was analyzed

OBJECTIVE AND METHODOLOGY

Medically intractable epilepsy patients with frequent breakthrough seizures are often admitted for elective inpatient video EEG monitoring to assess response to their current anti-seizure medications (ASM)

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ESTABLISHED UTILITY OF TDM

Assisting with dosing in older ASM with complex pharmacokinetics
Establishing individual benchmark, adherence & compliance
Monitoring pharmacokinetic variability in special situations (aging, pregnancy)

RESULT

Out of the total 101 elective VEEG admissions, 44 ASM levels were obtained in 29 patients
Levetiracetam levels were obtained most frequently (14/44)
9/29 had abnormal ASM levels; 5 of them had low levels and 4 had high levels
Dosing/Drug regimen was changed for 13/29 patients.
No medication changes were made based on ASM levels.
Treatment decisions were guided solely based on findings on EEG, ictal/interictal burden and clinical history

CONCLUSION

Routine monitoring of ASM is not recommended during elective VEEG admissions

DISCUSSION

TDM of most frequently used ASM, Levetiracetam (LEV) is less helpful as it is often a “send out lab” with a time lag in obtaining results.
TDM can be helpful in older ASM to establish medication adherence (Phenobarbital, Ethosuximide, Valproate, Carbamazepine) or the ones with zero order kinetics (Phenytoin)
Newer ASM have predictable pharmacokinetics better tolerability profile and often with a wider reference range therefore therapeutic ranges must be interpreted with caution, as many patients may be optimally treated at serum concentrations below or above the suggested range

REFERENCES