



Case Report

Refractory Status Epilepticus- The 24 hrs Therapeutic Challenge

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Abstract

A Rare Adult case of Refractory Status Epilepticus with continuous seizures has been brought into ICU. He was treated with multiple anti-epileptics: Phenytoin, midazolam, levetiracetam, despite of these many anti-epileptics, still seizures were observed in this particular case. By the involvement of clinical pharmacist, dose adjustment of midazolam was done and patient got relieved from the seizures.

Keywords: Status Epilepticus (SE), Refractory Status Epilepticus (RSE), Midazolam, Dose Adjustment, Intensive care unit (ICU).

Introduction

Status epilepticus (SE) has been define as more than 30minutes of continuous seizure activity or more sequential seizures without full recovery of consciousness in between for a total of more than 30 minutes^[1], Refractory status epilepticus is continuous or recurrent seizures with loss of consciousness lasting for lasts 24hrs despite of anesthetics. Refractory status epilepticus is the Life threatening Neurologic emergency in Intensive Care Units (ICUs)^[2]. It is interesting to note that in a large hospital based trial 35–44% of patients did not respond to common initial anticonvulsants^[3]. Encephalitis as primary cause of SE are at special risk of developing RSE^[2]. Meningitis, Multiple sclerosis Cerebral toxoplasmosis, Acute stroke, Remote stroke, Intra cerebral hemorrhage, Sinus venous thrombosis,

Post-traumatic brain damage, Brain tumor, Low levels of AEDs^[2,4].

Here we report the case of uncontrolled seizures for about 30hrs despite of administration of Benzodiazepin (lorazepam).

Case Description

A 22yrs old male has been brought to Emergency Room. Patient was presented with Involuntary movements of Upper Limb and Lower limb, Uprolling of eyes, Lack of consciousness. During transport in Ambulance to the hospital (almost 3hrs), he developed continuous seizures. He have history of Epilepsy, but he is free from seizures since 3yrs and not on regular medication from the past 3yrs.

Investigations

Hematological investigations like hemoglobin, leucocyte counts, erythrocyte sedimentation rate and peripheral blood smear including examination for malarial parasites were normal. Antigen test for malaria was negative. He had normal liver and renal function tests. Brain MRI revealed as Old calcified Granuloma.

Treatment

Intravenous cannula was inserted and blood was sent for estimating the sugar and electrolytes which turned out to be normal. He was admitted in neurology intensive care unit (ICU) with a provisional diagnosis of Refractory status epilepticus. He was given intravenous lorazepam-4mg followed by Phenytoin 800mg as stat dose. But still generalized tonic-clonic seizures (GCTC) were observed. Patient condition was explained to his Relatives and Electric Trachea intubation was done with sedation of Thiopental, But patient got no sedation with thiopental. Then midazolam 30mg in 500ml NS was given for sedation and Elective Intubation was done.

Tonic Seizures were observed so infused midazolam-30mg/hr over 3hrs. Despite of midazolam infusion he still developed Tonic seizures. So Levetiracetam 500mg given intravenously in 100ml NS. Now patient got into Full Post Ictal Phase. Now three drugs were given midazolam 40 mg iv infusion along with Levetiracetam 500mg BD followed by phenytoin 100mg IV TID. Patient Confusion got relieved. Midazolam dose was tampered. Patient was extubated and shifted to Acute Intensive Care unit, later got recovered discharged.

Discussion

Refractory status epilepticus is a rare condition in Adults and it is encountered in intensive care units with high percentage of mortality(30-50%) and morbidity, this condition is mostly observed in pediatrics^[5,6] RSE is a frequent episode of epilepsy continuous for more than 24hours and the treatment of choice in primary considerations is

general anesthesia. On decrease in dose of the general anesthesia, in some cases it results in the reoccur of seizure activity, and the treatment option in such cases is raise of the general anesthetic dose^[5].

RSE has the high incidence of the morbidity and the mortality. Till date there was no standard guidelines for the treatment of the RSE, the most published literature is on the case reports and case series (includes the case description)^[5].

The case reports of RSE was only on the pediatric subjects till today and here in this case, the subject age was 22years and noted with the previous history of seizure activity 3years back. Literature reveals that no single case of RSE was noted with the previous history of the seizure^[7].

We here-by report a case of RSE managed at a tertiary care teaching hospital. The etiology in the case was probably OLD CALCIFIED GRANULOMA was revealed through the MRI BRAIN scan of the subject. Later on in the subject medication history interview it has revealed that past history of the epilepsy. For the first attack is at the age of 19years and was on phenytoin 100mg BD on regular medication for 6months and later on discontinued the medication all at once without any tapering of dose and not recommended by any practitioner. Now patient admitted with the complaints of continuous seizure activity for about 3hours with no regaining of the consciousness, diagnosed as GCTC. And was administered with the lorazepam with the dose of 4mg and levetiracetam of 25mg stat and reported with tonic seizures and later on administered with phenytoin of 100mg dose, resulted in tonic seizure.¹ Possible drug interaction is between the midazolam and the levetiracetam which may lead to the respiratory depression^[9], management was done with Electric trachea intubation.

Choice of treatment include the add on with the second line agents or with the general anesthesia^[8] Choice of drug in the general anesthetics should be individualized^[5]. The standard dose of midazolam was 10mcg/kg/IV^[10]. Initially midazolam dose was found to be sub-therapeutic

(30mg) and was changed to the therapeutic level(40mg) on the intervention of we clinical pharmacist. Soon after the 24hours of admission the patient reached the postictal phase, shifted from ICU to an Acute intensive care Unit. Finally patient was counseled on discharge about the medication importance and its regimen. Warned not to skip or stop or alter the dose until and unless suggested by the practitioner. Patient was suggested for the ketogenic diet and which had a better response and had followed up till 12months and there was not a note of the recur of the seizure activity again^[7].

Conclusion

Clinical Pharmacist plays the key role in Intensive Care Unit Emergencies particularly Neuro related Rare cases like Refractory status epilepticus, interms of Dose Adjustments and to prevent drug complications. Through our involvement Right choice of drugs were suggested and Dose Adjustment was done for Midazolam in this particular case.

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9. Micromedex :- Drug-Drug interactions.
10. Micromedex :- Drug Information.