Use of Vigabatrin in Super Refractory Status Epilepticus – An Update

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Introduction

Animal studies have shown very high glutamate levels in status epilepticus (SE). Vigabatrin (VGB) irreversibly inhibits γ-amino butyric acid-transaminase (GABA-T), increases GABA, and may indirectly lower glutamate levels. Theoretically, this effect could reduce excitatory states and help control SE [1].

Our aims were to report the usefulness/efficacy of VGB in super refractory status epilepticus (SRSE) as an adjunct to general anesthesia and other anti-seizure medications (ASM).

Methods

We reviewed medical records of patients who received Vigabatrin as an adjunct for ASM's for treatment of SRSE at Ochsner Medical Center between 2014 and 2018.

Suppression of SRSE was defined as absence of epileptiform activity on EEG on stable infusion rates of anesthetic agents, but with return of epileptic activity with reduction of infusion rates.

Resolution of SRSE was defined as continued absence of epileptiform activity on EEG recordings when anesthetic agents were reduced and discontinued.

Tab 1: Baseline Characteristics

Variables	Alive (N=45)	Deceased (N=25)
Mean Age in years (range)	54.6 (3m - 89)	58.8 (8 - 86)
Female, n (%)	22 (49)	15 (60)
Mean Weight, kg	69.3	77.3
Prior H/O Seizure Disorder, n (%)	19 (42)	5 (20)
Etiology of SE [n]		
Anoxic Brain Injury Post Cardiac Arrest	3	12
Autoimmune	4	0
Cryptogenic	10	3
Genetic / Developmental	5	1
Ischemic & Hemorrhagic Stroke	12	6
Brain Metastasis	1	0
Toxic	4	1
Infection / Metabolic	6	2

Results

We identified 70 SRSE patients treated with VGB. Etiologies were attributed most to cerebrovascular accident and anoxic brain injury.

Anesthetics were used in all 70 patients, of which 44 received both propofol and ketamine. Propofol and ketamine were used alone in 22/70 and 4/70 patients, respectively.

VGB was the last agent to be added prior to control in 56/70 (80%). Maximal dose of VGB ranged from 200 - 4500 mg per day.

Tbl 2: Treatment Characteristics

Variables	Alive (N=45)	Deceased (N=25)
VGB as Last Agent, n (%)	37 (82)	19 (76)
ASM's Prior to VGB Use		
Lacosamide	45	20
Levetiracetam	45	20
Valporate	20	8
Perampanel	8	4
Topiramate	6	2
Lamotrigine	2	1
Clobazam	22	10
Carbamazepine / Oxcarbazepine	3	0
Phenytoin / Fosphenytoin	3	1
Phenobarbital / Pentobarbital	6	1
IVA's Prior to VGB Usage		
Ketamine	30	18
Maximum Rate (Range)	20 - 200	20 - 200
Propofol	42	22
Maximum Rate (Range)	20 – 200	20 -140

Results

SRSE resolved with the addition of VGB in 47/70 (67%) patients. Duration of VGB treatment before SRSE was resolved ranged from 1.1 to 21.8 days. 8 patients had SRSE resolved before the initiation of VGB and its addition prevented recurrence in 5 when anesthetics were stopped. In-hospital mortality of 25 patients (36%) were due to multisystem organ failure (4), anoxic brain injury from cardiac arrest (4), and withdrawal of care (17).

Tab 3: Outcome Characteristics

Variables	Alive (N=45)	Deceased (N=25)
SRSE Outcome's, n		
Suppression and Resolution	42	5
Suppression, but no Resolution	3	19
No Suppression and Resolution	0	1
SRSE Resolution Prior to VGB, n	8	0
SRSE Onset – VGB Onset, days	5.49	6.33
VGB Onset – SRSE Suppression, days	1.84	1.42

Conclusion

The use of VGB in our cohort has shown to be extremely important in achieving and maintaining control in the management of patients with SRSE.

References

McCormick J, Jonas N, Ramsay R, Sabharwal V. Vigabatrin: A Novel Approach for Treatment of Super Refractory Status Epilepticus, a Case Study of 2 Patients (P01.079). Neurology. 2012;78:P01-P01.079.