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Intravenous sodium valproate for diazepam refractory convulsive status epilepticus

[1]Lei Chen, [2]Peimin Feng, [1]Bo Zhou, [1]Jinmei Li, [1]Jinhua Wang, [1]Ling Liu, [1]Dong Zhou

[1]Department of Neurology, West China Hospital, Sichuan University, Chengdu, Sichuan; [2]Department of Gastroenterology, Hospital of Chengdu university of Traditional Chinese Medicine, Chengdu, Sichuan, PR China

Background and Objective: Convulsive status epilepticus (SE) is the most common and life-threatening form of SE. Treatment for SE differs greatly from the United States and Europe. For refractory SE, in which AEDs are ineffective in controlling SE, early anaesthesia treatment is recommended in United States and European SE guidelines.[1] In China, however, anaesthesia treatment is not routinely used, mainly because of insufficient understanding, with patients and their families being uncomfortable with the option. Prior to 1996, before intravenous (i.v.) sodium valproate (VPA) was used to treat SE in mainland China, nearly all the patients with refractory SE died. To date, 20 published studies have suggested i.v. VPA to be as effective as i.v. phenytoin/ fosphenytoin in controlling SE.[1-3] However, evidence based data to guide the management of benzodiazepine (lorazepam or diazepam) refractory convulsive SE is lacking. Therefore, selection of optimum treatment for refractory SE remains a challenge for neurologists. This study aimed to identify the short-term safety and efficacy of i.v. VPA therapy for diazepam refractory convulsive SE.

Methods: We prospectively audited all the patients with refractory convulsive SE treated at West China Hospital from September 1999 to March 2007 with i.v. VPA (30mg/kg, 6mg/kg/hr), after an initial loading dose of diazepam and intramuscular phenobarbitone failed. The efficiency and side effect of i.v.VPA were evaluated.

Results: A total of 25 patients with convulsive SE who met the study criteria were included in this report. The age ranged from 5 to 65 years. There were 10 males and 15 females. In 22 patients, the seizures were controlled within one hour by i.v. VPA, and anesthesia was not required. All the patients regained baseline mental status within one hour of seizure cessation and no patient experienced recurrent convulsive SE over the next 12 hours. The seizure duration before i.v. VPA therapy of uncontrolled patients were >12 hours as compared to <8 hours of controlled patients; and the uncontrolled patients had three or more comorbilities as compared to less comorbilities in other patients. No VPA-related local side effects (burning, pain, phlebitis at injection site) and systemic side effects (low blood pressure, heart rate disorder, respiratory suppression) were found during their hospital stay.

Conclusion: Intravenous VPA appears to be an effective and safe treatment for diazepam refractory convulsive SE. It provides a viable option for patients wishing to avoid anesthesia treatment, and i.v. phenobarbitone is not available in most hospitals in China. Further large scale studies should be done to determine whether i.v. VPA could be a standard non-sedative AED in the management of refractory SE.

Table 1: Patient characteristics

Etiology	Total no. of cases	GTCRS	CPRS	SPRS	MRS	Control
CNS infection	13	10	2	0	1	1GTCS & 2CPS not controlled
AEDs reduce or withdrawal	5	2	3	0	0	control
Traumatic brain injury	3	0	2	1	0	control
Stroke	2	1	0	1	0	control
Toxic-metabolic encyphalopathy	1	0	0	0	1	control
Cerebral palsy	1	1	0	0	0	control

GTCRS = generalized tonic-clonic refractory status epilepticus
CPRS = complex partial refractory status epilepticus
SPRS = simple partial refractory status epilepticus
MRS = myoclonic refractory status epilepticus

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