

Clinical observation and nursing strategy during VEEG monitoring on epileptic seizure of patients with intractable epilepsy.

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Abstract

Objective: The clinical values of Video Electroencephalogram (VEEG) on the epileptic seizure of patients with intractable epilepsy were observed, and the corresponding nursing keys were summarized.

Methods: From January, 2015 to December, 2016, 60 patients with intractable epilepsy were selected as the observation group. The psychological states of all the patients prior to VEEG were evaluated. The observation group was treated with antiepileptic drugs, and first-aid measures and nursing countermeasures were prepared in case of emergency epileptic seizures during the detection process. Another 60 epileptic patients were selected as the control group. These patients had been treated through conventional nursing methods. Incidences of adverse effects and nursing satisfactions of the two groups were compared.

Results: Preventive measures and good nursing modes were well prepared for the observation group during VEEG. Thus, the VEEG recorded the epileptogenic focus waveform and lesion accurately and helped patients recover from the epileptic seizure. No syndrome was observed in all patients in the observation group. Significant difference was observed between the two groups in terms of incidence of adverse effects and nursing satisfaction ($P < 0.05$).

Conclusions: VEEG is a good diagnostic item for the epileptogenic focus of epileptic patients and provides clinical basis for therapeutic imaging. Moreover, preparing first-aid and nursing measures for epileptic seizures during VEEG is necessary to avoid accidents.

Keywords: VEEG monitoring, Intractable epilepsy, Epileptic seizure, Nursing strategy.

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Introduction

As a new electroencephalography monitoring method, Video Electroencephalogram (VEEG) can combine the clinical manifestations of epileptic patients and synchronous changes of brain electrical activities, and record clinical manifestations during monitoring of brain waveform changes [1,2]. In this paper, clinical observation and nursing strategy during the VEEG monitoring of epileptic patients with intractable epilepsy were analysed. Results are introduced in the following text.

Data and Methods

Clinical data

From January, 2015 to December, 2016, 60 patients with intractable epilepsy were selected as the observation group. The psychological states of all the patients before the VEEG were evaluated. Another 60 patients were selected as the observation group. This group was treated with antiepileptic drugs, and first-aid measures and nursing countermeasures were prepared for emergency epileptic seizures during the detection process. The observation group had 42 males and 18 females, both of which had ages of 3-62 years. Among these patients, 52 had generalized tonic-clonic seizure, 5 had absence seizure, and 3 had partial and other seizure types.

Method

We used the NeurOne EEG/ERP system of Finland Mega Company for brain electrical monitoring and video recording. It was operated according to the system specifications and related standards. Flashing or noise bilateral orientation tests were implemented at conscious patients and lasted 12-24 h.

Psychological nursing

The patients were worried about epileptic seizures, and thus large emotional fluctuations during the VEEG would easily influence the monitoring results. To keep the patients at steady mentality during VEEG, we evaluated the patients for the factors that trigger their seizures and modified the environment to prevent epileptic seizures induced by these external factors. Specific psychological nursing was provided according to the cognitive states and psychological conditions of the patients with regard to the disease, as well as their educational backgrounds and individual differences.

Medication

Patients with intractable epilepsy have a long disease course and thus must take drugs regularly. All the respondents were instructed not to take any antiepileptic drugs and sedatives 3 d before the VEEG. The goal and significance of drug discontinuance were introduced to the patients and their family members for their understanding and cooperation.

Nursing measures during VEEG

(1) Nursing measures in the warning period: Although epileptic seizures occur suddenly, patients can be transferred to a bed or laid on the ground to prevent collapsing and contusions caused by loss of consciousness. Surrounding hard objects and sharp instruments are moved away to prevent injuries upon collapse. Some patients may have extreme emotions during the attack and manifest aggressive behaviors. They may hurt people or themselves, destroy things, and even kill people. These require immediate countermeasures to prevent accidents. In such instances, intramuscular sedatives can be adopted. Antiepileptic drugs combined with antipsychotics are necessary for overexcited patients or those with attacking behaviors. (2) Nursing measures during acute attack stage: generalized tonic-clonic is the most common epileptic seizure type and accounts for 80% of all epileptic seizures. In such cases, monitoring-oriented fixed measures can be adopted during VEEG. Upon indication of epileptic seizure, the pressing plate is placed between the upper and lower teeth to prevent tongue biting. During the stage of attack, a patient are laid supine, their clothes are unbuttoned, and their heads are placed to one side to help them discharge oral secretions and vomit and prevent asphyxia caused by the inhalation of these secretions into the air passage. Pressure is applied on the occiput upon epileptic seizures to prevent neck hyperextension and on the lower mandible to prevent lower mandible rigidity. Drenching is avoided when secretions are present in the respiratory tract, and suction is adopted when necessary.

Sedatives are administered upon the advice of the attending doctor. (3) Nursing measures in continuous stage of epileptic seizure: When patients suffer epileptic seizures continuously in a short period, serious complications (e.g., encephaledema and cerebral hernia) can occur if necessary measures are not adopted promptly. These complications threaten the safety of the patients. At such instances, intravenous drug administration according to the advice of the attending doctor is necessary, except for above measures. Attention must be paid to infusion speed. If epileptic seizure continues and cannot be controlled after medication, the attending nurse has to decrease the infusion speed and administer the infusion pump. Moreover, diuresis, dehydration, low-flow oxygen uptake, correcting water-electrolyte, and acid-base anomalies are adopted.

Statistical analysis

SPSS26.0 was used for statistical analysis. The measurement data were expressed by ($\bar{x} \pm S$). Inter- and intra-group differences were tested by t-value. Enumeration data were tested by χ^2 . A difference with $P < 0.05$ means is statistically significant.

Results

Incidence of adverse effects in the two groups

Preventative measures and good nursing methods were prepared and provided to the observation group during VEEG. The VEEG records epileptogenic focus waveforms and lesion positions accurately and can help patients pass through the epileptic seizure smoothly. No syndrome was observed in patients in the observation group. The incidences of adverse effects in the observation and control groups were 0.0% and 11.7%, respectively. Significant differences were observed between the groups in terms of incidence of adverse effects ($P < 0.05$, Table 1).

Table 1. Adverse effect of 60 patients (n (%)).

Groups	Patient s	Hit	Self- mutilation	Others	Incidence
Observation group	60	0 (0.0)	0 (0.0)	0 (0.0)	0.0
control group	60	3 (5.0)	2 (3.3)	1 (1.7)	11.7
χ^2		3.251	2.141	1.025	5.624
P		0.352	0.256	0.147	0.000

Nursing satisfaction of the two groups

Nursing satisfaction in the observation and control groups were 91.7% and 80.0%, respectively, which showed statistically significant difference ($P < 0.05$, Table 2).

Cognitive function comparison of two groups after nursing

The observation group showed significantly higher cognitive functions than the control group after nursing (P<0.05, Table 3).

Table 2. Nursing satisfactions of two groups (n (%)).

Groups	Patients	Very satisfying	Basically satisfying	Unsatisfying	Satisfaction
Observation group	60	35 (58.3)	20 (33.4)	5 (8.3)	91.7
Control group	60	30 (50.0)	18 (30.0)	12 (20.0)	80.0
χ ²		5.324	2.142	5.632	5.362
P		0.004	0.241	0.003	0.001

Table 3. Cognitive function comparison of two groups after nursing ($\bar{x} \pm S$).

Groups	Executive function	Naming	Attention	Language	Abstract	Delayed memory	Orientation	Total score of cognitive function
Observation Group (60)	4.94 ± 0.28	2.95 ± 0.27	5.97 ± 0.33	3.04 ± 0.06	1.94 ± 0.24	4.98 ± 0.36	2.97 ± 0.33	29.35 ± 0.85
Control Group (60)	4.71 ± 0.16	2.73 ± 0.18	5.68 ± 0.31	2.98 ± 0.05	1.73 ± 0.16	4.66 ± 0.34	2.74 ± 0.31	27.53 ± 0.71
t	4.731	4.497	4.249	5.095	4.829	4.286	3.369	10.901
P	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000

Discussion

Epilepsy has a complicated pathogenesis. Approximately 70% of epileptic patients have unknown causes that could not be prevented. Moreover, a considerable number of epileptic seizures have definite causes, such as brain tumors and arteriovenous malformations [3,4]. These causes are difficult to prevent. Furthermore, epileptic seizures are the collaborative results of several factors. Seizure frequency, nervous system lesion, and induction factors increase the difficulty of prevention [5]. Epileptic patients with long-term usage of sedatives eat less and experience malnutrition and electrolyte metabolism disorder. They must also take potassium supplements, because potassium maintains their normal brain cell functions. However, when not taken appropriately, potassium is secreted through urine, sweat, and digestive juices, thereby lowering their serum potassium. Therefore, epileptic patients must increase their potassium intake [6]. Epileptic patients are prone to magnesium deficiency, especially those taking antiepileptic drugs for a long time, and thus increasing their magnesium intake is necessary.

As modern brain electrical detection and radiological technologies progress, the development of VEEG greatly facilitates modern epilepsy therapy. Compared with conventional electroencephalography (EEG) and ambulatory electroencephalogram, VEEG has the following advantages [7,8]: (1) it can be used any time and can increase the detection rate of clinical paradoxical discharge of epileptic patients. Doctors can observe clinical manifestations through imaging

data. (2) It can synchronously observe brain waveform changes and clinical manifestations, thus assisting in the evaluation of the correlation between abnormal waveform and clinical manifestations and reducing misdiagnoses and missed diagnoses.

Effective and reasonable nursing measures must be provided during the therapy [9,10]: (1) Patients must have reasonable rest and sleep to prevent fatigue. For patients with slight hypertension, appropriate sports activities are necessary. These measures must be focused on alternating work with rest, prohibiting long-time aggravating activities, and using appropriate sedatives to patients with autonomic nervous function disorders. (2) Psychological nursing: some patients easily become excited, anxious, and depressive. Psychentonia, rage, and stimulation are closely related with this disease. Therefore, doctors must treat patients patiently, kindly, and thoroughly. (3) Diet nursing: Patients must have a light diet that is low in salt, calories, fats, and cholesterol. They must be encouraged to eat fruits and vegetables, stop smoking, and stop the intake of control alcohol, coffee, strong tea, and other revivers. Furthermore, patients who are taking potassium diuretics must eat foods that have high potassium content, such as mushrooms, bananas, and oranges. Obese people should limit intake of high-calorie foods and control their weights within the ideal range. (4) Special patients must be observed closely: Patients with continuous increase of blood pressure should measure their blood pressures 2-3 times daily and maintain good records. Blood pressure levels during standing,

sitting, and lying down should be measured to determine the variations.

Conclusion

In this study, the VEEG data of 60 patients with intractable epilepsy are analysed. VEEG is an effective detection method and can record EEG and clinical manifestations simultaneously. Effective nursing measures can reduce accidents during brain electrical detection and facilitate the increase in the quality of life of patients. Thus, these measures are recommended for extensive application in clinics.

References

1. Berg AT, Levy SR, Novotny EJ, Shinnar S. Predictors of intractable epilepsy in childhood: a case-control study. *Epilepsia* 1996; 37: 24-30.
2. Tu JJ, Ye MY, Song B, Liu H, Zhang AM. Ticagrelor affects the glucuronidation metabolism of anti-epileptic drug carbamazepine in children. *Lat Am J Pharm* 2017; 36: 629-632.
3. Thilakvathi B, Shenbaga DS, Bhanu K, Malaippan M. EEG signal complexity analysis for schizophrenia during rest and mental activity. *Biomed Res India* 2017; 28: 1-9.
4. Radhakrishnan K, So EL, Silbert PL, Jr JC, Cascino GD. Predictors of outcome of anterior temporal lobectomy for intractable epilepsy: a multivariate study. *Neurology* 1998; 51: 465-471.
5. He X, Huang L, Lu Y, Dou M, Zhang Z, Zhang J, Zhao X. The protective effects of artemisinin on penicillin sodium-induced epileptic seizures in mice. *Lat Am J Pharm* 2016; 35: 1241-1247.
6. Chandrakar C, Sharma M. Approach for design of early warning monitoring system for detection of the abnormal cardiac behaviour of any individual. *Biomed Res India* 2017; 28: 81-86.
7. Van RC, Ijpma FF, Nicolai JP, Werker PM. Bells palsy before Bell: Evert Jan Thomassen a Thuessink and idiopathic peripheral facial paralysis. *J Laryngol Otol* 2009; 123: 1193-1198.
8. Song M, Xiao F, Yu H, Liu B, Deng X. The anticonvulsive activities of venlafaxine and its interactions with some antiepileptic drugs. *Lat Am J Pharm* 2016; 35: 1959-1965.
9. Santos-Lasaosa S, Pascual-Millan LF, Tejero-Juste C, Morales-Asin F. Peripheral facial paralysis: Aetiology, diagnosis and treatment. *Rev Neurologia* 2000; 30: 1048-1053.
10. Kiani F, Shahsavani A. The study of the relationship between pain onset time interval and referring of patients with MI to Khatami Al Anbia hospital of zahedan, Iran (2014-2015). *Biomed Res India* 2017; 28: 32-35.

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