World Journal of *Clinical Cases*

World J Clin Cases 2024 January 16; 12(2): 236-465





Published by Baishideng Publishing Group Inc

W J C C World Journal of Clinical Cases

Contents

Thrice Monthly Volume 12 Number 2 January 16, 2024

EDITORIAL

236 Use of artificial intelligence in the field of pain medicine

Chang MC

ORIGINAL ARTICLE

Retrospective Study

240 Ultrasound blood flow characteristics changes in fetal umbilical artery thrombosis: A retrospective analysis

Hong SJ, Hong LW, He XQ, Zhong XH

- 249 Electroencephalogram findings in 10 patients with post-stroke epilepsy: A retrospective study Wen LM, Li R, Wang YL, Kong QX, Xia M
- 256 Exploration of cardiac rehabilitation nursing for elderly patients with myocardial infarction based on individualized cardiac rehabilitation Liu HN, Gao B
- Survival benefit of concurrent chemoradiotherapy for advanced ampulla of Vater cancer 267 Kwon CH, Seo HI, Kim DU, Han SY, Kim S, Lee NK, Hong SB, Ahn JH, Park YM, Noh BG
- 276 Utility of plasma D-dimer for diagnosis of venous thromboembolism after hepatectomy Miyake T, Yanagimoto H, Tsugawa D, Akita M, Asakura R, Arai K, Yoshida T, So S, Ishida J, Urade T, Nanno Y, Fukushima K, Gon H, Komatsu S, Asari S, Toyama H, Kido M, Ajiki T, Fukumoto T
- Lenvatinib combined with sintilimab plus transarterial chemoembolization as first-line treatment for 285 advanced hepatocellular carcinoma

Sun SS, Guo XD, Li WD, Chen JL

Observational Study

293 Timing theory integrated nursing combined behavior change integrated theory of nursing on primiparous influence

He YX, Lv Y, Lan TT, Deng F, Zhang YY

302 Inverse relationship between platelet Akt activity and hippocampal atrophy: A pilot case-control study in patients with diabetes mellitus

Tokuda H, Hori T, Mizutani D, Hioki T, Kojima K, Onuma T, Enomoto Y, Doi T, Matsushima-Nishiwaki R, Ogura S, Iida H, Iwama T, Sakurai T, Kozawa O

Randomized Controlled Trial

314 Impact of continuous care on cardiac function in patients with lung cancer complicated by coronary heart disease

Gao T, Luo JL, Guo P, Hu XW, Wei XY, Hu Y



. .	World Journal of Clinical Cases
Conte	Thrice Monthly Volume 12 Number 2 January 16, 2024
322	Use of cognitive-behavioral career coaching to reduce work anxiety and depression in public employees
-	Otu MS, Sefotho MM
	META-ANALYSIS
335	Efficacy and safety of Yangxue Qingnao Granules in treatment of migraine: A systematic review and meta- analysis
	Zhou B, Wang GS, Yao YN, Hao T, Li HQ, Cao KG
	CASE REPORT
346	Use of MLC901 in cerebral venous sinus thrombosis: Three case reports
	Arsovska AA, Venketasubramanian N
354	Primary biliary cholangitis presenting with granulomatous lung disease misdiagnosed as lung cancer: A case report
	Feng SL, Li JY, Dong CL
361	Asymptomatic low-grade appendiceal mucinous neoplasm: A case report
	Yao MQ, Jiang YP, Wang YY, Mou YP, Fan JX
367	Surgically treating a rare and asymptomatic intraductal papillary neoplasm of the bile duct: A case report
	Zhu SZ, Gao ZF, Liu XR, Wang XG, Chen F
374	Absence of enhancement in a lesion does not preclude primary central nervous system T-cell lymphoma: A case report
	Kim CS, Choi CH, Yi KS, Kim Y, Lee J, Woo CG, Jeon YH
383	Mental retardation, seizures and language delay caused by new SETD1B mutations: Three case reports
	Ding L, Wei LW, Li TS, Chen J
392	Three cancers in the renal pelvis, bladder, and colon: A case report
	Chen J, Huang HY, Zhou HC, Liu LX, Kong CF, Zhou Q, Fei JM, Zhu YM, Liu H, Tang YC, Zhou CZ
399	Severe aconite poisoning successfully treated with veno-arterial extracorporeal membrane oxygenation: A case report
	Kohara S, Kamijo Y, Kyan R, Okada I, Hasegawa E, Yamada S, Imai K, Kaizaki-Mitsumoto A, Numazawa S
405	Chemotherapy combined with bevacizumab for small cell lung cancer with brain metastases: A case report
	Yang HY, Xia YQ, Hou YJ, Xue P, Zhu SJ, Lu DR
412	Diagnostic challenges and individualized treatment of cervical adenocarcinoma metastases to the breast: A case report
	Akers A, Read S, Feldman J, Gooden C, English DP
418	Subsequent bilateral acute carpal tunnel syndrome due to tophaceous infiltration: A case report
	Yeoh SC, Wu WT, Shih JT, Su WC, Yeh KT



Contor	World Journal of Clinical Cases
Conter	Thrice Monthly Volume 12 Number 2 January 16, 2024
425	Uniportal video-assisted thoracoscopic fissureless right upper lobe anterior segmentectomy for inflam- matory myofibroblastic tumor: A case report
	Ahn S, Moon Y
431	Hybrid treatment of varied orthodontic appliances for a patient with skeletal class II and temporo- mandibular joint disorders: A case report and review of literature
	Lu T, Mei L, Li BC, Huang ZW, Li H
443	Significant improvement after sensory tricks and trunk strength training for Parkinson's disease with antecollis and camptocormia: A case report
	Wang JR, Hu Y
451	Granulomatous mastitis in a 50-year-old male: A case report and review of literature
	Cui LY, Sun CP, Li YY, Liu S
460	Double-chambered left ventricle with a thrombus in an asymptomatic patient: A case report
	Kim N, Yang IH, Hwang HJ, Sohn IS



Contents

Thrice Monthly Volume 12 Number 2 January 16, 2024

ABOUT COVER

Editorial Board Member of World Journal of Clinical Cases, Xin Ye, MD, Professor, Department of Oncology, The First Affiliated Hospital of Shandong First Medical University, Jinan 250014, Shandong Province, China. yexintaian2020@163.com

AIMS AND SCOPE

The primary aim of World Journal of Clinical Cases (WJCC, World J Clin Cases) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The WJCC is now abstracted and indexed in Science Citation Index Expanded (SCIE, also known as SciSearch®), Journal Citation Reports/Science Edition, Current Contents®/Clinical Medicine, PubMed, PubMed Central, Reference Citation Analysis, China Science and Technology Journal Database, and Superstar Journals Database. The 2023 Edition of Journal Citation Reports[®] cites the 2022 impact factor (IF) for WJCC as 1.1; IF without journal self cites: 1.1; 5-year IF: 1.3; Journal Citation Indicator: 0.26; Ranking: 133 among 167 journals in medicine, general and internal; and Quartile category: Q4.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Hua-Ge Yu; Production Department Director: Xu Guo; Editorial Office Director: Jin-Lei Wang.

NAME OF JOURNAL	INSTRUCTIONS TO AUTHORS			
World Journal of Clinical Cases	https://www.wjgnet.com/bpg/gerinfo/204			
ISSN	GUIDELINES FOR ETHICS DOCUMENTS			
ISSN 2307-8960 (online)	https://www.wjgnet.com/bpg/GerInfo/287			
LAUNCH DATE	GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH			
April 16, 2013	https://www.wjgnet.com/bpg/gerinfo/240			
FREQUENCY	PUBLICATION ETHICS			
Thrice Monthly	https://www.wjgnet.com/bpg/GerInfo/288			
EDITORS-IN-CHIEF Bao-Gan Peng, Salim Surani, Jerzy Tadeusz Chudek, George Kontogeorgos, Maurizio Serati	PUBLICATION MISCONDUCT https://www.wjgnet.com/bpg/gerinfo/208			
EDITORIAL BOARD MEMBERS	ARTICLE PROCESSING CHARGE			
https://www.wjgnet.com/2307-8960/editorialboard.htm	https://www.wjgnet.com/bpg/gerinfo/242			
PUBLICATION DATE January 16, 2024	STEPS FOR SUBMITTING MANUSCRIPTS https://www.wjgnet.com/bpg/GerInfo/239			
COPYRIGHT	ONLINE SUBMISSION			
© 2024 Baishideng Publishing Group Inc	https://www.f6publishing.com			

© 2024 Baishideng Publishing Group Inc. All rights reserved. 7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA E-mail: office@baishideng.com https://www.wjgnet.com



W J C C World Journal of Clinical Cases

Submit a Manuscript: https://www.f6publishing.com

World J Clin Cases 2024 January 16; 12(2): 249-255

DOI: 10.12998/wjcc.v12.i2.249

ISSN 2307-8960 (online)

ORIGINAL ARTICLE

Retrospective Study Electroencephalogram findings in 10 patients with post-stroke epilepsy: A retrospective study

Li-Min Wen, Ran Li, Yan-Ling Wang, Qing-Xia Kong, Min Xia

Specialty type: Clinical neurology

Provenance and peer review:

Unsolicited article; Externally peer reviewed.

Peer-review model: Single blind

Peer-review report's scientific quality classification

Grade A (Excellent): 0 Grade B (Very good): 0 Grade C (Good): C Grade D (Fair): 0 Grade E (Poor): 0

P-Reviewer: Sotelo J, Mexico

Received: September 19, 2023 Peer-review started: September 19, 2023

First decision: October 24, 2023 Revised: November 7, 2023 Accepted: December 22, 2023 Article in press: December 22, 2023 Published online: January 16, 2024



Li-Min Wen, Clinical Medicine College, Jining Medical University, Jining 272067, Shandong Province, China

Ran Li, School of Basic Medical Sciences, Shandong University, Jinan 250012, Shandong Province, China

Yan-Ling Wang, Qing-Xia Kong, Min Xia, Department of Neurology, The Affiliated Hospital of Jining Medical University, Jining 272007, Shandong Province, China

Corresponding author: Min Xia, MD, Doctor, Department of Neurology, Affiliated Hospital of Jining Medical University, No. 89 Guhuai Road, Rencheng District, Jining 272007, Shandong Province, China. xiaminyy1982@163.com

Abstract

BACKGROUND

Post-stroke epilepsy is a common and easily overlooked complication of acute cerebrovascular disease. Long-term seizures can seriously affect the prognosis and quality of life of patients. Electroencephalogram (EEG) is the simplest way to diagnose epilepsy, and plays an important role in predicting seizures and guiding medication.

AIM

To explore the EEG characteristics of patients with post-stroke epilepsy and improve the detection rate of inter-seizure epileptiform discharges.

METHODS

From January 2017 to June 2020, 10 patients with post-stroke epilepsy in our hospital were included. The clinical, imaging, and EEG characteristics were collected. The stroke location, seizure type, and ictal and interictal EEG manifestations of the patients with post-stroke epilepsy were then retrospectively analyzed.

RESULTS

In all 10 patients, epileptiform waves occurred in the side opposite to the stroke lesion during the interictal stage; these manifested as sharp wave, sharp-wave complex, or spike discharges in the anterior head lead of the side opposite to the lesion.

CONCLUSION



In EEG, epileptiform waves can occur in the side opposite to the stroke lesion in patients with post-stroke epilepsy.

Key Words: Post-stroke epilepsy; Electroencephalogram; Seizure; Stroke; Slow wave

©The Author(s) 2024. Published by Baishideng Publishing Group Inc. All rights reserved.

Core Tip: Post-stroke epilepsy refers to epileptic seizures occurring after stroke in patients without a history of epilepsy or any brain or systemic disease causes. Post-stroke epilepsy can occur any time after stroke. The most common type of poststroke epilepsy is focal or tonic-clonic seizures, which then progress to bilateral clonic seizures. The present study retrospectively analyzed the electroencephalogram characteristics of 10 patients with post-stroke epilepsy; these mainly manifested as epilepsy-like waves on the side opposite to the stroke lesion during the intervals between seizures.

Citation: Wen LM, Li R, Wang YL, Kong QX, Xia M. Electroencephalogram findings in 10 patients with post-stroke epilepsy: A retrospective study. World J Clin Cases 2024; 12(2): 249-255 URL: https://www.wjgnet.com/2307-8960/full/v12/i2/249.htm DOI: https://dx.doi.org/10.12998/wjcc.v12.i2.249

INTRODUCTION

Post-stroke epilepsy (PSE) refers to seizures that occur within a certain time after stroke in patients without a prior history of epilepsy or brain and systemic diseases. The epileptic discharges detected by electroencephalogram (EEG) are generally consistent with the lesion site of the stroke^[1].

PSE can be divided into two categories based on the time between the stroke and the first seizure. Seizures that occur within 1 week after stroke are called "early-onset" seizures, also known as "acute symptomatic epilepsy." Epileptic seizures that occur 1 wk or more after stroke are known as "late-onset" seizures, and are most common 6-12 mo after stroke. A later onset is associated with an increased risk of recurrent stroke, also known as "stroke-related epilepsy" [2]. The most common seizure types in PSE are focal seizures or tonic-clonic seizures that progress to bilateral focal seizures. Although generalized convulsive status epilepticus is very rare in PSE, nonconvulsive status epilepticus occurs in 4%-19% of patients with acute stroke[3,4]. Focal status epilepticus occurs occasionally, and epileptic seizures may be the first or only manifestation of acute stroke; they thus require prompt recognition and active management[4].

PSE is a common complication after acute cerebrovascular events, and is a common etiology in older patients with epilepsy. It can prolong the hospitalization time of patients with cerebrovascular diseases, increase disability and mortality rates, and affect the long-term prognosis and quality of life of patients[1,5]. EEG is the most objective auxiliary examination method for the diagnosis of PSE, and plays a very important role in epileptic seizure prediction, disease monitoring, drug selection, and prognosis evaluation[6]. In the present study, the special EEG findings of 10 PSE patients were retrospectively reviewed and are briefly reported.

MATERIALS AND METHODS

Participants

From January 2017 to June 2020, data were collected from 10 patients with PSE in our hospital. Through retrospective analysis, their EEG abnormalities were noted as sharp or spike waves on the side opposite to the stroke lesion, which occurred between seizures. Of the 10 patients, there were seven males and three females aged 58 to 71 years. Five of the patients had cerebral hemorrhage and five had cerebral infarction. The study was conducted following the principles of the Helsinki Declaration and was approved by the Affiliated Hospital of Jining Medical University. Any images or data included in this article are anonymized, and written informed consent was not required.

Clinical data collection

The clinical data of the 10 patients – including age, sex, type and location of stroke, complications, time between stroke and first seizure, type of seizure, interictal EEG, ictal EEG, drug treatment, and prognosis - were analyzed retrospectively. Each patient underwent a brain magnetic resonance imaging (MRI) or computed tomography (CT) scan.

EEG examination

After admission, the patients were examined using 16-hour long-range video EEG. For the EEG (Nicolet V32, Natus Medical, Middleton, WI, United States), the scalp electrodes were placed according to the international 10-20 system estimation method. Bilateral earlobes or average leads were used as reference points, and bipolar leads were recorded. The patients were recorded during the open-close eyes test, hyperventilation, and photic stimulation activation.



RESULTS

Clinical data and imaging findings of the patients

Of the 10 patients with PSE (Table 1), two had early-onset epilepsy after cerebral infarction, with times between stroke and first seizure of 3 h and 2 d, respectively. The other eight patients had late-onset epilepsy, with times between stroke and first seizure ranging from 5 mo to 16 years. The seizures mostly manifested as focal seizures that evolved into bilateral tonic-clonic seizures, although one patient had non-convulsive seizures. The stroke site was located in the cerebral cortex in five cases, in the basal ganglia region in four cases, and in the corona radiata and centrum semiovale in one case.

Case 2 was a 58-year-old man with cerebral hemorrhage in the right frontotemporal lobe. The time between stroke and first seizure was 7 years, and he had generalized clonic (motor) seizures. At the time of seizures, he showed convulsions of the extremities with loss of consciousness, upturned eyes, foaming at the mouth, tongue biting, and urinary incontinence; these lasted for 10 minutes. Case 7 was a 58-year-old man with cerebral infarction in the left corona radiata and centrum semiovale (Figure 1). The time between stroke and first seizure was 5 years, and he had focal to bilateral tonic-clonic (motor) seizures. Seizures were characterized by a rightward deviation of the head and eyes as well as facial twitching on the right side. Case 8 was a 59-year-old man with cerebral infarction in the left cerebral hemisphere. The time between stroke and first seizure was focal onset (nonmotor). Seizures manifested as a loss of consciousness, upward gaze, and lack of motion.

Results of EEG examinations

Of the 10 patients with PSE (Table 1), six exhibited slow waves on the lesion side, two showed low voltage on the lesion side, and two had normal EEG backgrounds on the lesion side. During the interictal stage, epileptiform waves were observed in the side opposite to the stroke lesion in all 10 patients; these manifested as sharp wave, sharp-wave complex, or spike discharges in the anterior head lead on the side opposite to the lesion (frontal and/or temporal lobe).

Ictal EEG was captured in Case 7 only. The EEG of Case 7 during seizures showed low-amplitude fast waves originating from the left frontal lobe (lead F3) and left anterior temporal lobe (lead F7), conducting to the frontal zero (lead Fz), central zero (lead Cz), and left center (lead C3) areas; each lead had gradually increasing amplitude and decreasing frequency (Figure 2). This patient's background EEG showed low voltage in all left leads, and his interictal EEG showed low-amplitude sharp-wave complexes in the right frontal pole (lead Fp2), right frontal lobe (lead F4), and right anterior temporal lobe (lead F8) (Figure 3).

The background EEG of Case 2 exhibited 9-10 Hz α rhythm and low amplitude in the right temporal lobe. His interictal EEG showed intermittent and asynchronous discharges of medium- to low-amplitude sharp waves and sharp-wave complexes in the left middle temporal lobe (lead T3), and especially in the left anterior temporal lobe (lead F7). The background EEG of Case 8 exhibited slow waves in the left occipital lobe and low voltage in all left leads. His interictal EEG showed a few intermittent and synchronous discharges of sharp wave and sharp-wave complexes in the right frontal pole (lead F2), right frontal lobe (lead F4), right center (lead C4), and central zero (lead Cz).

DISCUSSION

Brain tissue damage caused by stroke is the main cause of PSE. Acute stroke results in local brain tissue hypoxia, abnormal brain metabolism, whole-brain low/high perfusion, glutamate excitotoxicity, ion channel dysfunction, and blood-brain barrier damage; these changes can lead to early-onset PSE. By contrast, glial scarring, chronic inflammation, angiogenesis, neurodegeneration, neurogenesis, selective neuronal loss, and synaptic plasticity secondary to stroke are closely related to late-onset PSE[3,7]. The occurrence of PSE can also have a negative impact on stroke; PSE can lead to decreased intracranial blood flow and increased intracranial pressure, aggravate secondary damage of neurological function, and worsen patient prognosis. Simultaneously, the risk of recurrent stroke increases[8,9].

The most common EEG findings in acute stroke are focal slow waves and diffuse slow waves on the infarct or hemorrhage side[10]. The presence of focal spikes, sharp waves, or unilateral periodic epileptiform discharges suggests an increased risk of PSE[11]. For patients with symptomatic epilepsy who have structural lesions in the brain, bioelectrical activity decreases as a result of damage at the stroke site and in surrounding neurons, and scalp EEG asymmetries—such as focal slow waves or low voltage—can occur. These background abnormalities are generally consistent with the structural lesions[2,12]. However, in some cases, such as those of cerebral trauma or cerebral perforation deformity, the focal or unilateral epileptiform discharges are inconsistent with the structural lesions, and the discharge sites are located distant from the structural lesions, or even in the contralateral hemisphere[13].

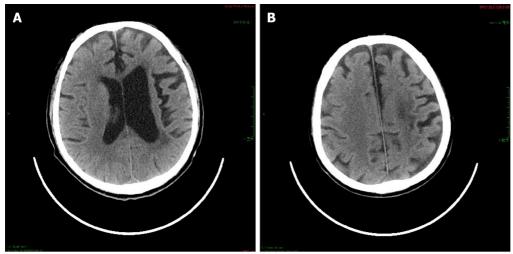
In the 10 PSE patients in the present study, symptom onset was consistent with the structural abnormal lesions that were observed on imaging; however, the interictal epileptic waves were located contralaterally to the lesions. The underlying mechanisms of this phenomenon may be as follows: (1) Local or unilateral pathological changes and abnormal sites of background EEG mean that EEG activity is almost lost; there is therefore no structural and functional basis for producing epileptiform discharges, and the discharges thus come from the relatively normal lobes or hemispheres. For example, it has been reported that when most of one hemisphere is damaged and necrotic, EEG shows generalized low voltage in this hemisphere, and discharges often come from the relatively normal hemisphere (*i.e.*, on the same side of the hemiplegia)[14]; and (2) A local structural or functional brain injury affects distant sites *via* specific known or unknown intermediate links, thus producing epileptiod discharges[13].

Zaishidena® WJCC | https://www.wjgnet.com

Table 1 Clinical date of 10 post-stroke epilepsy patients

Case	Sex/age (yr)	Type of stroke	Location of stroke	Type of seizure	Time between the first seizure and stroke	Background EEG	Interictal EEG
Case 1	Male/62	СН	Right basal ganglia	Focal to bilateral tonic-clonic (motor)	1 yr	4-7 Hz slow waves in the right anterior head	High amplitude sharp waves in the left temporal lobe
Case 2	Male/58	СН	Right frontotemporal lobe	Generalized clonic (motor)	7 yr	9-10 Hz α rhythm, low amplitude in the right temporal lobe	Medium-low amplitude sharp waves and sharp-wave complex in lead F7 and T3, especially F7
Case 3	Male/71	СН	Right basal ganglia	Focal to bilateral tonic-clonic (motor)	16 yr	Slow waves in all the right leads	Epileptic waves in the left anterior head
Case 4	Female/64	СН	Right basal ganglia	Focal onset (nonmotor)	2 d	Slow waves in the right temporal lobe	Paroxysmal sharp waves in the left temporal lobe
Case 5	Female/64	СН	Right frontoparietal lobe	Focal to bilateral tonic-clonic (motor)	5 mo	9-10 Hz α rhythm	Bilateral sharp waves and sharp-wave complex, especially left
Case 6	Male/54	CI	Right basal ganglia and temporoparietal lobe	Focal to bilateral tonic-clonic (motor)	2 yr	10-11 Hz α rhythm	Medium-high amplitude sharp waves in the left temporal lobe
Case 7	Male/58	CI	Left corona radiata and centrum semiovale	Focal to bilateral tonic-clonic (motor)	5 yr	Low voltage in all the left leads	Low amplitude sharp-wave complex in lead Fp2, F4, F8
Case 8	Male/59	CI	Left cerebral hemisphere	Focal onset (nonmotor)	8 mo	Slow waves in lead O1, low voltage in all the left leads	Sharp wave and sharp-wave complex in lead Fp2, F4, C4, Cz
Case 9	Female/58	CI	Right frontal lobe and corpus callosum	Focal to bilateral tonic-clonic (motor)	3 h	Slow waves in the right anterior head	Asynchronous sharp waves in the bilateral anterior head
Case 10	Male/61	CI	Right frontal temporal parietal lobe	Focal to bilateral tonic-clonic (motor)	8 mo	Slow waves in lead O2	Medium-high amplitude sharp waves in the left anterior head

EEG: Electroencephalogram; CH: Cerebral hemorrhage; CI: Cerebral infarction.



DOI: 10.12998/wjcc.v12.i2.249 **Copyright** ©The Author(s) 2024.

Figure 1 Brain computed tomography of Case 7. A and B: Brain computed tomography showing multiple patchy, slightly low-density shadows in the left corona radiata (A) and centrum semiovale (B), suggesting old cerebral infarction.

Baisbideng® WJCC | https://www.wjgnet.com

Fp1-F3•	with the shear and the second states and the second s	A Sec	www.www.www.www.	vily//////////////	hond Million Mil	and a shake the population	AN MANAMANA (AN CANANG CANANG AN AN AN AN
F3-C3• C3-P3•	menter and a second	an and a second		Millillillillillillillillillillillillill	mmmmm	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	un an
P3-01• Fp2-F4•	www.hater.com	Lautha and water with a start of the start o	month and the algorithm	www.www.	monormore	www.www.www.	When the second of the second s
F4-C4•	and and the second a	minhuman	manna	and a second and a second s	- Annonement	Munichan Jan Mark	month and the second and the second
P4-02● Fp1-F7●	Mary and manager and a service and a service of the	A destand from the start of the start of the	any many many many	-			
F7-T3•	montenterman	an manual and	monthly when the second	Martin Martin	www.www.www.www.	KITHING MARKE	YANNI MANAMINI MALAMINI MANAMINI MA
T3-T5• T5-01•	participation and a second second and the second	Name and a second and the second	an papagan ber an	a preservation and the second se	www.www.www.	under an	anne a san an a
Fp2-F8• F8-T4•	whether the state of the state	with months and a second and a se	Marthe Martin Martin Marthan	and the second	Hered Marked Harles Mark	htere and the second and the second	ristald and an
T4-T6• T6-02•	and when a man a second a second and the second and	and the second second and the second second	-man management and a second	mandar warded and	Harrison and a second	manyanannyanan	anter anter a la attractiva de la contractiva de la contractiva de la contractiva de la contractiva de la contr Anter a contractiva de la contractiva de
Fz-Cz•		un and a second	Mun mar and Ma	and the second second	mon when when when when the	a drawn an	any and the second of the seco
ECG-双极	41419 706 F26 30 mm/sec. 70 u/km 70.0 Hz, 1000 Hz, 50 Hz		W				
© Fp1-F3• F3-C3•	Innyan Wertrid Man Inden Antonio Man namina and an and an antonio	MANNA MANNA MANNA	Minmannan	MANAMAN	1 MANARANA	MAMMANIMAN	Manana Mana Manana Manana M
C3-P3• P3-01•							might and a second a
Fp2-F4• F4-C4•	Harden Marine Marin	MWWWWWWWWWWW	Amanan Maria	Mar Manual	monorman	mppphanenally Angle Markanen	Manahanana Manahanana Manahanana na Manahanananana Manahanana Manahanana Manahanana Manahanana Manahanana Manahanana Manahana Manahana Manahana M
C4-P4• P4-02•	non a support of the second	HANN MANAMETRI MANNAN MANNA	anna manna	and when the second	mannanan	water water water and	and the first second and the second
Fp1-F7• F7-T3•	manus har month and the server har har har har har har har har har ha	Man man way way have been and the start of t	Manipulinamen	www.www.	M. M. M. Mary	Mannamina	and the second and th
T3-T5• T5-01•	mannonmannan	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	www.www.ww	mannam	mmmmm	nownownon	analar Markalan yana kana kana kana kana kana kana ka
Fp2-F8• F8-T4•	r-1011/1011-1011-1111-11111-111-1111-111	the contraction of the second s	Marshall Marshall	Man Man M	man Mana Mana	mannaman	Martan Marine Marine
T4-T6● T6-O2●	want production was a series when a series of the series o	and a second and a second s	the phone and the second	normanian	stransformation and the	manen where an an and the second second	๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛๛
Fz-Cz• Cz-Pz•	MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM	MMMMMMMMMMMMMMMM	NMMMMMMMM	MMMMMM	mallowman	MMMMMMMMM	www.man.www.www.man.www.
ECG-双极	414 55 758-545 20 metrice: 70 uvices, 70 0 Hz, 1000 Hz, 50 Hz			hh	Jup	MMM	Copyright ©The Author(s) 2024.

Figure 2 Electroencephalogram during seizures of Case 7. Electroencephalogram showing low-amplitude fast waves originating from the F3 and F7 Leads and conducting to the Fz, Cz, and C3 Leads; each lead had gradually increasing amplitude and decreasing frequency.

PSE can lead to an important increase in the disability and mortality rates of stroke patients. However, compared with other types of symptomatic epilepsy, the refractory rate of PSE drugs is relatively low, and overall prognosis is better[5]. Together, the current findings indicate that the use of long-range video EEG monitoring should be refined in patients with severe cerebrovascular disease, to identify atypical seizures and unexplained disturbances of consciousness as soon as possible and to improve the detection rate of interictal epileptiform discharges[6]. For patients with PSE presenting with a first seizure (especially a focal nonmotor seizure), if scalp EEG discharges are on the side contralateral to the lesion during seizure intervals, the following steps should be taken: (1) Carefully examine the patient's medical history; (2) analyze whether the clinical manifestations of seizure onset correspond to the softening lesions of stroke; and (3) capture the ictal EEG (if possible). A diagnosis of epilepsy should be considered for such focal seizures, and the possible etiology should first be presumed to be stroke.

CONCLUSION

In EEG, epileptiform waves can occur in the side opposite to the stroke lesion in patients with post-stroke epilepsy.



Baishidena® WJCC | https://www.wjgnet.com

0	
Fp1-F3•	
F3-C3•	
C3-P3•	
P3-01•	
Fp2-F4•	have a second and the
F4-C4•	warmen war and the
C4-P4•	
P4-02•	
Fp1-F7•	
F7-T3•	
T3-T5•	
T5-01•	
Fp2-F8•	man was a second was
F8-T4•	
T4-T6•	
T6-02◆	man when the second when the second when the second s
Fz-Cz•	
Cz-Pz◆	
ECG-双极	her
	0.37.24 双极导联, 30 mintee, 70 U/km, 70.0 Hz, 50 Hz

DOI: 10.12998/wjcc.v12.i2.249 **Copyright** ©The Author(s) 2024.

Figure 3 Electroencephalogram during the interictal stage of Case 7. Electroencephalogram showing low-amplitude sharp-wave complex discharges in the Fp2, F4, and F8 Leads.

ARTICLE HIGHLIGHTS

Research background

In electroencephalogram (EEG), epileptiform waves can occur in the side opposite to the stroke lesion in patients with post-stroke epilepsy.

Research motivation

EEG is the most objective auxiliary examination method for the diagnosis of post-stroke epilepsy (PSE). This imaging modality plays a very important role in epileptic seizure prediction, disease monitoring, drug selection, and prognosis evaluation.

Research objectives

This study aims to explore the EEG characteristics of patients with PSE and improve the detection rate of inter-seizure epileptiform discharges.

Research methods

The clinical data, imaging characteristics, seizure intervals, and EEG characteristics of 10 patients with PSE in our hospital (from January 2017 to June 2020) were analyzed retrospectively.

Research results

During the interictal stage, epileptiform waves occurred in the side opposite to the stroke lesion in all 10 patients. These manifested as sharp wave, sharp-wave complex, or spike discharges in the anterior head lead of the side opposite to the lesion.

Research conclusions

In patients with PSE, epileptiform waves can occur in the side opposite to the stroke lesion in EEG.

Research perspectives

The current findings indicate that long-range video EEG monitoring should be refined in patients with PSE, to improve the detection rate of interictal epileptiform discharges.

FOOTNOTES

Co-first authors: Li-Min Wen and Ran Li.

Author contributions: Wen LM and Li R contributed equally to this work; Xia M revised the manuscript; Wang YL and Kong QX



WJCC https://www.wjgnet.com

provided all kinds of support; all authors have read and approve the final manuscript.

Supported by Research Fund for Lin He's Academician Workstation of New Medicine and Clinical Translation in Jining Medical University, No. JYHL2019FMS25; and The Key Research and Development Program of Jining, No. 2022YXNS028.

Institutional review board statement: The study was reviewed and approved by the Affiliated Hospital of Jining Medical University Institutional Review Board (Approval No. 2021-09-C081).

Informed consent statement: Patients were not required to provide informed consent for the study because the analysis used anonymous clinical data that were obtained after each patient or their representative family members agreed to the treatment by written consent.

Conflict-of-interest statement: All authors declare that there is no conflict of interest.

Data sharing statement: No additional data are available.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/Licenses/by-nc/4.0/

Country/Territory of origin: China

ORCID number: Ran Li 0009-0000-1418-3846; Yan-Ling Wang 0000-0002-3429-0208; Qing-Xia Kong 0000-0003-3808-7490; Min Xia 0000-0002-0692-7726.

S-Editor: Gong ZM L-Editor: A P-Editor: Cai YX

REFERENCES

- Labovitz DL, Hauser WA, Sacco RL. Prevalence and predictors of early seizure and status epilepticus after first stroke. *Neurology* 2001; 57: 200-206 [PMID: 11468303 DOI: 10.1212/wnl.57.2.200]
- 2 Tanaka T, Ihara M. Post-stroke epilepsy. Neurochem Int 2017; 107: 219-228 [PMID: 28202284 DOI: 10.1016/j.neuint.2017.02.002]
- 3 Myint PK, Staufenberg EF, Sabanathan K. Post-stroke seizure and post-stroke epilepsy. Postgrad Med J 2006; 82: 568-572 [PMID: 16954451 DOI: 10.1136/pgmj.2005.041426]
- 4 Bentes C, Franco AC, Peralta AR, Viana P, Martins H, Morgado C, Casimiro C, Fonseca C, Geraldes R, Canhão P, Pinho E Melo T, Paiva T, Ferro JM. Epilepsia partialis continua after an anterior circulation ischaemic stroke. *Eur J Neurol* 2017; 24: 929-934 [PMID: 28497610 DOI: 10.1111/ene.13310]
- 5 Arntz RM, Maaijwee NA, Rutten-Jacobs LC, Schoonderwaldt HC, Dorresteijn LD, van Dijk EJ, de Leeuw FE. Epilepsy after TIA or stroke in young patients impairs long-term functional outcome: the FUTURE Study. *Neurology* 2013; 81: 1907-1913 [PMID: 24174587 DOI: 10.1212/01.wnl.0000436619.25532.f3]
- 6 Feyissa AM, Hasan TF, Meschia JF. Stroke-related epilepsy. Eur J Neurol 2019; 26: 18-e3 [PMID: 30320425 DOI: 10.1111/ene.13813]
- 7 Reddy DS, Bhimani A, Kuruba R, Park MJ, Sohrabji F. Prospects of modeling poststroke epileptogenesis. J Neurosci Res 2017; 95: 1000-1016 [PMID: 27452210 DOI: 10.1002/jnr.23836]
- 8 Stefanidou M, Das RR, Beiser AS, Sundar B, Kelly-Hayes M, Kase CS, Devinsky O, Seshadri S, Friedman D. Incidence of seizures following initial ischemic stroke in a community-based cohort: The Framingham Heart Study. *Seizure* 2017; 47: 105-110 [PMID: 28364691 DOI: 10.1016/j.seizure.2017.03.009]
- Huang CW, Saposnik G, Fang J, Steven DA, Burneo JG. Influence of seizures on stroke outcomes: a large multicenter study. *Neurology* 2014; 82: 768-776 [PMID: 24489133 DOI: 10.1212/WNL.00000000000166]
- 10 Bentes C, Martins H, Peralta AR, Morgado C, Casimiro C, Franco AC, Fonseca AC, Geraldes R, Canhão P, Pinho E Melo T, Paiva T, Ferro JM. Early EEG predicts poststroke epilepsy. *Epilepsia Open* 2018; 3: 203-212 [PMID: 29881799 DOI: 10.1002/epi4.12103]
- 11 Bentes C, Martins H, Peralta AR, Casimiro C, Morgado C, Franco AC, Fonseca AC, Geraldes R, Canhão P, Pinho E Melo T, Paiva T, Ferro JM. Post-stroke seizures are clinically underestimated. J Neurol 2017; 264: 1978-1985 [PMID: 28808783 DOI: 10.1007/s00415-017-8586-9]
- Sueiras M, Thonon V, Santamarina E, Sánchez-Guerrero Á, Riveiro M, Poca MA, Quintana M, Gándara D, Sahuquillo J. Is Spreading Depolarization a Risk Factor for Late Epilepsy? A Prospective Study in Patients with Traumatic Brain Injury and Malignant Ischemic Stroke Undergoing Decompressive Craniectomy. *Neurocrit Care* 2021; 34: 876-888 [PMID: 33000378 DOI: 10.1007/s12028-020-01107-x]
- 13 Liu XY, Wu X. Clinical EEG. Beijing: People's Health Publishing House, 2017: 235-236
- 14 Garzon E, Gupta A, Bingaman W, Sakamoto AC, Lüders H. Paradoxical ictal EEG lateralization in children with unilateral encephaloclastic lesions. *Epileptic Disord* 2009; 11: 215-221 [PMID: 19740718 DOI: 10.1684/epd.2009.0264]

Baisbideng® WJCC | https://www.wjgnet.com



Published by Baishideng Publishing Group Inc 7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA Telephone: +1-925-3991568 E-mail: bpgoffice@wjgnet.com Help Desk: https://www.f6publishing.com/helpdesk https://www.wjgnet.com

