

CASE REPORT

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Hemifacial spasm is not affected by state of consciousness: a case report

Tao Li¹, Zhuo Feng², Chunli Song³ and Zhanhua Liang^{1*}

Abstract

Background: Hemifacial spasm (HFS) is a movement disorder caused by mechanical compression of the facial nerve after it has left the brainstem and is characterized by brief or sustained twitching of the muscles innervated by that nerve. Often we observe spasm in an awakening situation. Actually contractions persist during sleep. To our knowledge, there were no reports on how HFS manifests under disturbance of consciousness. Here, we report a case of primary HFS in which the patient's symptoms persisted in a coma.

Case presentation: A 74-year-old female with right-sided primary HFS for 20 years and had received botulinum toxin injections in our hospital. Unfortunately she was carried to emergency department after traumatic right pneumothorax by accident. During the emergency treatment, she lost consciousness due to simultaneous cardiac arrest and respiratory arrest. She was then admitted to the emergency intensive care unit for further treatment. During her hospitalization, she was in a coma with stable vital signs and persisting symptoms of HFS. Thus, a multidisciplinary consultation was requested to identify whether it was focal cortical seizures involving the right-side facial muscles. Physical examination revealed brief involuntary clonic or tonic contractions accompanied with the 'Babinski-2 sign'. A combination of relevant data, including her past history, clinical presentation and a negative computed tomography scan of the head, led to a diagnosis of right-sided HFS. As the symptoms of HFS are not life-threatening, the use of anticonvulsants is unnecessary.

Conclusions: For the layperson, it is crucial to seek a multidisciplinary consultation to obtain a correct diagnosis.

Keywords: Hemifacial spasm, Coma, Differential diagnosis, Intensive care unit

Background

Hemifacial spasm (HFS) is a movement disorder caused by mechanical compression of the facial nerve after it has left the brainstem and is characterized by brief or sustained twitching of the muscles innervated by that nerve. Although HFS is not fatal, it often leads to social embarrassment and interference with vision from involuntary eye closure leading to functional disability [1–3]. It is characterized by involuntary clonic or tonic contractions of the facial expression muscles, usually unilateral and

rarely bilateral, beginning in the periorbital musculature usually starting in the low eyelid and progressing to the perioral, platysma and other facial expression muscles [4]. The symptoms of HFS are aggravated by stress, chewing, speech, light, cold stimuli and fatigue while relieved by quiet. Unlike other movement disorders, contractions persist in sleep which may add to the morbidity of the condition by predisposing the affected individual to disturbed sleep and insomnia. One recent research using facial electromyogram (EMG) and electrocardiogram (ECG) overnight indicated that wake or light sleep stages were more often accompanied by HFS [5]. The percentage of abnormal contraction of facial muscles in sleep was as high as 80% which influences sleep quality. To our knowledge, there were no reports on how HFS manifests

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under disturbance of consciousness. Here, we report a case of primary HFS in which the patient's symptoms persisted in a coma.

Case presentation

A 74-year-old female with right-sided primary HFS for 20 years and no other medical conditions had received botulinum toxin injections in our hospital. Unfortunately, she was carried to emergency department after traumatic right pneumothorax by accident. During the emergency treatment, she lost consciousness due to simultaneous cardiac arrest and respiratory arrest. Emergency physicians immediately performed cardiopulmonary resuscitation (CPR), followed by tracheal intubation and closed chest drainage. After about 3 min, her heartbeat resumed. However, her consciousness did not return to normal. She was then admitted to the emergency intensive care unit for further treatment, including a subsequent tracheotomy. During her hospitalization, she was in a coma with stable vital signs and persisting symptoms of HFS. Thus, a multidisciplinary consultation was requested to identify whether it was focal cortical seizures involving the right facial muscles. Though she was under coma status and on a life-support machine, the physical examination revealed right-side facial musculature involved in involuntary movement (Fig. 1). Transient involuntary clonic or tonic contractions have also been observed, especially when external stimuli such as oral care can exacerbate the symptoms. Her orbicularis oculi and eyelids contracted, internal part of the frontalis contracted and ipsilateral eyebrow rose (Additional file 1: Video S1). A combination of relevant data, including her past history, clinical presentation and a negative computed tomography (CT) scan of the head, led to a diagnosis of right-sided HFS. As the symptoms of HFS are not life-threatening, the use of anticonvulsants is unnecessary. The treatment should focus on life support and arousal.

Discussion and conclusions

One important diagnostic clue of HFS is called the 'Babinski-2 sign', 'the other Babinski sign' or 'brow lift sign' and was firstly described by Babinski in 1905 [6–9]. It refers to the synchrony of the temporal and zygomatic branches of the facial nerve resulting in simultaneous contraction of the frontalis and orbicularis oculi muscles, which is not seen in other facial spasm disorders such as blepharospasm and hemifacial seizures. While the sensitivity is 86%, the specificity is nearly 100% for HFS, and among trained professionals, there is a high consensus in identification of this sign which cannot be voluntarily reproduced by an individual [10].



Fig. 1 The patient was in a coma and tracheotomy with a life-support machine. Contractions of right-side muscles of facial expression existed. She also presented with paradoxical rising of the eyebrow as the orbicularis oculi contracted which is 'the other Babinski sign'

For the most part, we observe HFS in awakenings. Researches involving 16 and 12 patients, respectively, using polysomnography (PSG) indicate that HFS does not disappear in sleep but may decrease in strength of muscle contraction significantly compared to the waking period [11, 12]. In addition, as we have reported, symptoms of HFS persist in patients with disturbances of consciousness.

Although HFS is recognized as a disorder by movement disorder specialists, similar disorders can sometimes mimic its appearance, such as partial motor seizures. For the layperson, it is crucial to seek a multidisciplinary consultation to differentiate the diagnosis of focal cortical epilepsy involving the face and to obtain a correct diagnosis [13]. It is important to distinguish between the two conditions, particularly in the emergency department and intensive care unit, as seizures are common and may be inadvertently misdiagnosed or inappropriately diagnosed or treated [14, 15]. In patients with isolated facial

movements of unknown or unclear etiology, EEG and multidisciplinary consultation should be strongly considered in the event of diagnostic confusion [16]. However, due to the critical condition of our patient, who was on life support, it was impractical to perform an EEG and facial EMG to detect any abnormal muscle response. HFS can be treated surgically or with oral medications, such as benzodiazepines, baclofen, and anticonvulsants if possible, but botulinum toxin injections are generally considered to be the treatment of first choice [17]. Herein symptoms of HFS were not life-threatening and anticonvulsants were unnecessary [18].

In this case, we have demonstrated the presentation of HFS in the presence of impaired consciousness, and multidisciplinary consultation made the diagnosis and subsequent treatment appropriate.

Abbreviation

HFS: Hemifacial spasm.

Supplementary Information

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Additional file 1: Video S1. The patient was in a coma and tracheotomy with a life-support machine in emergency department. Contractions of right-side muscles of facial expression existed. She also presented with paradoxical rising of the eyebrow as the orbicularis oculi contracted which is 'the other Babinski sign'. Meanwhile, slight asymmetry of the eyebrows in spasm intervals existed.

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Authors' contributions

TL is the first author who writes the manuscript. ZF works for the treatment of the patient and draft preparation. CS and ZL work for the review and critique of the article. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

Not applicable.

Declarations

Ethics approval and consent to participate

The case report was approved by the First Affiliated Hospital of Dalian Medical University Ethics Committee.

Consent for publication

We have obtained written informed consent for this publication from the patient's family.

Competing interests

The authors declare they have no competing interests.

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