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| Thesis Title                 | Hemifacial Spasm: an Electrophysiological<br>Evidence of Facial Motor Neurons<br>Hyperexcitability                          |
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#### ABSTRACT

The underlying mechanism of muscle spasm in patients with hemifacial spasm (HFS) remains controversial; ephaptic transmission or facial nucleus abnormal hyperexcitability.

#### Objective

To prove the underlying mechanism of muscle spasm in HFS that was due to the hyperexcitability of facial motoneurons and brainstem interneurons .

#### Design

Paired-shock technique was performed to elicit blink reflex response in 20 HFS patients and 21 normal subjects. A

second shock delivered at a varying time interval between 50-900 msec after the first reveals excitability changes induced by a preceding impulse. In each case, paired stimuli were applied on both sides of the face and simultaneous recorded response from the orbicularis oculi muscles on both sides.

### Subjects

Twenty HFS patients from the Movement Disorder Clinic, Division of Neurology, Department of Medicine, Faculty of Medicine, Siriraj Hospital, Mahidol University and 21 normal subjects were recruited. Age range between 30-60 years.

### Results

In normal subjects, the absolute refractory period of  $R_2$  response was found to lie between 200-400 msec with mean and standard deviation of 271.42 and 64.36 msec. On the other hand, in patient group, it was found to lie between 100-200 msec with mean and standard deviation of 160 and 50.62 msec on both the affected and the unaffected sides, irrespective the side of stimulation. These indicate that the absolute refractory period of HFS patients was significant shorter ( $p < 0.05$ ) than the absolute refractory period of normal subjects.

### Conclusion

This findings suggest that the underlying mechanism of HFS is the enhanced excitability of facial motoneurons and brainstem interneurons mediating blink reflex.