

A peripheral tremor associated with intractable pain after traffic accident : case report

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— Abstract —

There are debates about whether peripherally induced movement disorders exist. We report a case of upper limb tremor induced by peripheral nerve injury. A 25-year-old male patient presented with pain and tremor of the left upper extremity, 2 days after a car accident. Magnetic resonance images of the brain and cervical spine were normal. His past medical history was unremarkable and there were no family members with symptoms of movement disorders. He suffered from an aggravating tremor for about 10 minutes, four to six times a day. We treated the patient with medication, epidural infusion, cervical nerve root block and trigger point injection of the trapezius muscle. The pain subsided 50% and the incidence of tremor attacks was reduced to once or twice a day.

The role of peripheral trauma in the genesis of movement disorders has not been generally accepted. It is unclear whether peripheral trauma can induce dystonia and other movement disorders. It has been proposed that peripheral trauma can alter sensory input and induce cortical and subcortical reorganization that generates a movement disorder. Some studies provide evidence for central reorganization following peripheral injury.

Key Words: Peripheral tremor, Intractable pain, Traffic accident

Introduction

There has been a debate about whether peripherally induced movement disorders

exist or whether movement disorders after peripheral nerve injury are psychogenic in origin. The reason for this debate is that movement disorders usually occur without

any history of prior trauma and trauma is usually not associated with movement disorders.¹⁾ However, a previous study documented that peripheral trauma can cause several movement disorders.^{1,3,4)} Here we report a case of upper limb tremor induced by peripheral nerve injury.

Case Report

A 25-year-old male patient presented with pain and tremor of the left upper extremity 2 days after a car accident. Magnetic resonance images of the brain and cervical spine were normal. His past medical history

was unremarkable and no family members had symptoms of movement disorders. The pain from the left upper extremity was 9/10 on a numeric rating scale and the characteristics of his tremor were a rhythmic, involuntary, and oscillating movement of the left arm. He suffered from an aggravating tremor for about 10 minutes, four to six times a day. The frequency of tremor was about 6 Hz at rest, but it alternated between intermittent and fast. The central motor conduction time (CMCT) of both biceps brachii muscle (Table 1) and somatosensory evoked potentials (SEPs) of both median nerves showed normal latency (Table 2). We

Table 1. The CMCT (central motor conduction time) of both biceps brachii muscle Motor Nerve Conduction:

Nerve and Site	Latency	Amplitude	Segment	Latency Difference
Brain.L				
Head	12.3 ms	0.4 mV	Bicepsbrachii	9.2 ms
Head	21.5 ms	0.8 mV	APB-Head	21.5 ms
Cervical.R				
C5	5.3 ms	0.7 mV	Bicepsbrachii	7.7 ms
C7	13.0 ms	0.7 mV	APB-Head	13.0 ms
Brain.R				
Head	11.3 ms	0.6 mV	Bicepsbrachii	9.7 ms
Head	21.0 ms	0.5 mV	APB-Head	21.0 ms
Cervical.L				
C5	4.6 ms	0.3 mV	Bicepsbrachii	8.2 ms
C7	12.8 ms	1.0 mV	APB-Head	12.8 ms

Table 2. The SEPs (somatosensory evoked potentials) of both median nerve.

Somatosensory Evoked Potentials: Median nerve

Latency Left ms	Latency Left ms	Latency Right ms	Latency Right ms
1.1:N19	1.1:P23	2.1:N19	2.1:P23
18.6	22.1	19.5	22.5

treated the patient with medication, epidural infusion, cervical nerve root block and a trigger point injection into the trapezius muscle. The pain subsided by 50% and the incidence of tremor attack was reduced to once or twice a day.

Discussion

The role of peripheral trauma as a cause of movement disorders has not been generally accepted. It is unclear whether peripheral trauma can induce dystonia and other movement disorders. However, it has been proposed that peripheral trauma alters sensory input and induces cortical and subcortical reorganization and can generate a movement disorder. Furthermore, a previous study provides evidence for central reorganization following peripheral injury.¹⁾

There is a need for a consensus on the diagnostic criteria of peripherally induced movement disorders.²⁻⁵⁾ Jankovic¹⁾ proposed the following criteria for the diagnosis of peripherally induced movement disorders: (1) The trauma is severe enough to cause local symptoms for at least 2 weeks or requires medical evaluation within 2 weeks after trauma, (2) the initial manifestation of the movement disorder is anatomically related to the site of injury, and (3) the onset of the movement disorder occurs within days or months after the injury. Our patient meets these criteria.

The possibility of a psychogenic origin or that the trauma unmasked an underlying subclinical tremor in our patient is unlikely. In addition, tremor in our patient persisted during sleep suggesting that the movement disorder is not psychogenic in origin. The characteristics of psychogenic movement disorders is suggested by a sudden onset, spontaneous remissions, changing frequency, amplitude, and pattern, paroxysmal occurrence, distractibility, and a character of the movement that is incongruous with a typical movement disorder.^{6, 7)} Peripherally induced movement disorders are often associated with pain and other sensory phenomena.¹⁾ The pain was controlled and tremor was improved in our patient.

The pathophysiologic mechanisms of peripherally induced movement disorders have not yet been elucidated. But, the notion that alteration of sensory input and reorganization of central cortical and subcortical areas by peripheral trauma has been gaining support from a growing body of scientific evidence.¹⁾ Therefore, we suggest that further studies and additional scientific evidence are necessary to establish mechanisms for peripherally induced movement disorders.

요 약

말초에서부터 야기된 행동장애가 존재하는지 아니면 말초 신경 손상 후의 행동장애가 심리적인 것으로 인한 것인지에 대한 논의가 계

속 되고 있다. 말초 신경 손상에 의해 야기된 상지의 진전에 대한 증례를 보고하고자 한다. 25세 남자환자는 자동차 사고 이틀 후 상지의 통증과 진전이 발생하였다. 뇌 및 경추의 자기 공명영상 촬영상 특이소견이 없었다. 과거력상 특이 소견 없었으며 행동장애에 대한 가족력 또한 없었다. 그는 하루에 약 네 차례에서 여섯 차례 십분 이상 지속되며 악화되는 진전으로 고통 받았다. 약물 치료, 경막외주사 주입, 경추의 신경차단술, 통증유발부위 주사요법 등으로 통증 조절을 하였다. 그 결과 통증이 반 정도 줄었으며 진전의 강도, 시간, 빈도가 줄어들었다.

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