

# Limb Shaking Secondary to Carotid Artery Dissection: Case Report

## Karotis Arter Diseksiyonuna Sekonder 'Limb Shaking': Olgu Sunumu



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### Summary

Limb shaking is involuntary, rhythmical or dysrhythmical, transient, and usually coarse trembling or shaking of upper or lower extremities. Described in this report is a 47-year-old male patient who presented with sudden onset left-sided paresthesias and weakness. He had a similar episode with shaking movements of left arm followed by transient weakness and paresthesias 1 month before presentation. He had multiple acute and subacute infarctions on cranial magnetic resonance imaging (MRI). Cerebral digital subtraction angiography (DSA) revealed calibration changes and irregularity of the right internal carotid artery compatible with dissection and oral anticoagulant therapy was administered. The patient was followed for 6 months under effective oral anticoagulant therapy without appearance of any new symptoms. Limb shaking is a symptom of carotid artery disease (CAD) that can lead to severe cerebral infarction. It is important to recognize this unusual symptom in order to begin appropriate treatment of the ischemic event.

Keywords: Dissection; limb shaking; stroke; transient ischemic attack.

### Özet

'Limb Shaking' üst veya alt ekstremitelerin, istemsiz, ritmik veya disritmik, geçici ve genelde kaba olan titreme hareketidir. Burada ani başlangıçlı sol taraflı uyuşma ve güçsüzlük yakınması ile başvuran; öyküsünde bir ay öncesinde de sol kolunda titreme hareketi sonrasında gelişen benzer bir geçici atağı olan 47 yaşında bir erkek hasta sunulacaktır. Kranial manyetik rezonans görüntülemesinde multipl akut ve subakut enfarktleri saptanan hastanın serebral anjiyografisinde karotis arter diseksiyonu saptanmış olup oral antikoagülan tedavi ile takibe alınmış ve altı aylık izlemde yeni yakınma gözlenmemiştir. 'Limb shaking' karotis arter hastalığının bir belirtisi olup ciddi enfarktler ile sonuçlanabilmektedir. Nadir karşılaşılan bu semptomun tanınması, vasküler olaya uygun tedavi başlanması açısından önem taşımaktadır.

Anahtar sözcükler: Diseksiyon; limb shaking; inme; geçici iskemik atak.

### Introduction

Limb shaking is involuntary, rhythmical or dysrhythmical, transient, and usually coarse trembling or shaking of upper or lower extremities.<sup>[1,2]</sup> Limb shaking is reported to originate from severe stenosis or occlusive disease of carotid artery.<sup>[2-5]</sup> It may be triggered by factors affecting hemodynamic stability, like rising, exercise, or hyperextension of the neck.<sup>[5,6]</sup> This unusual symptom must be regarded as a warning sign, since underlying factors may cause significant morbidity and mortality.

This report describes a 47-year-old patient admitted with limb shaking and diagnosed as carotid artery dissection.

### Case Report

A 47-year-old male patient with no significant past medical history presented with sudden onset left-sided paresthesias and weakness. He had a similar episode with shaking movements of the left arm followed by weakness and paresthesias 1 month before presentation. Shaking movements lasted not longer than 5 minutes, occurring intermittently for a day,

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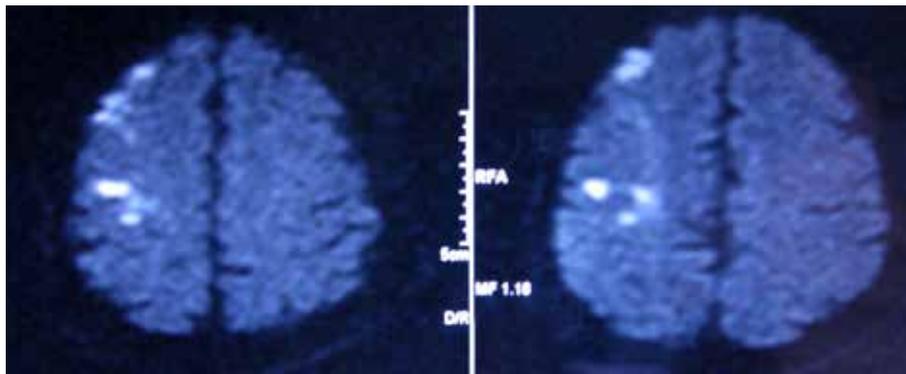
and paresthesias and weakness continued for approximately a week before healing completely. He did not complain of headache. He had no history of trauma. At time of admission to the clinic, he had left-sided weakness and paresthesias. Neurological examination revealed left central facial paresis, left-sided hemiparesis and hemihypoesthesias. There were no pathological findings in Doppler ultrasonography (US) of extracranial carotid and vertebral arteries. Cranial magnetic resonance imaging (MRI) showed acute and subacute infarctions in the right middle frontal gyrus and precentral gyrus (Figure 1). There was focal slowing without epileptiform discharges on electroencephalographic (EEG) examination of the relevant regions. His laboratory examinations were notable for hyperlipidemia and hyperhomocysteinemia. Cerebral digital subtraction angiography (DSA) indicated calibration changes and irregularity of right internal carotid artery (ICA) compatible with dissection (Figure 2). Subsequently, oral anticoagulant therapy was administered.

He was diagnosed as limb shaking ascribed to infarction, since timing was in close association with stroke and infarction located anatomically in relation to motor movements of extremities.

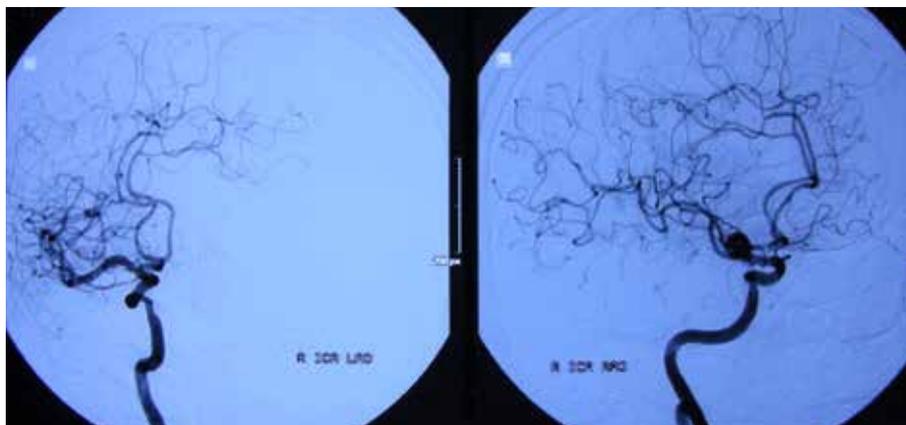
After 6 weeks, follow-up DSA demonstrated no changes in vessel wall irregularity. The patient was followed for 6 months under effective oral anticoagulant therapy without appearance of any new symptoms.

## Discussion

The present case describes limb shaking transient ischemic attack (TIA), secondary to carotid artery dissection. Limb shaking is an uncommonly encountered symptom and the underlying disease is usually underdiagnosed or diagnosis is delayed. It is generally accepted as TIA. However it may be misdiagnosed as focal motor seizure.<sup>[7]</sup> In addition, presenta-



**Fig. 1.** Multiple subacute and acute infarctions in right middle frontal and precentral gyri on MRI.



**Fig. 2.** Cerebral DSA, change of calibration and irregularity on right internal carotid artery compatible with dissection.

tion as a hyperkinetic movement disorder, such as hemiballismus-hemichorea, asterix or orthostatic tremor, may lead to diagnostic confusion.<sup>[8–10]</sup> However, short duration, subsequent paresis or numbness, and precipitation by factors affecting hemodynamic stability suggest a vascular lesion.<sup>[2,5,6]</sup>

It is usually reported in cases of severe stenosis or occlusive disease of carotid artery,<sup>[2–4,9]</sup> but there are also reports with lesions of middle cerebral artery (MCA) and anterior cerebral artery (ACA).<sup>[11–13]</sup> Critical stenosis was not observed in this case; however, patient had dissection of ICA. Therefore, it was speculated that embolism from dissection site might have obstructed terminal arteries, since there were multiple cerebral infarction sites. No case describing limb shaking related to dissection was found in a PubMed search of literature written in English.

Homocystinemia and hiperlipidemia are defined as vascular risk factors in the present case. Although there is selection bias in studies, it has been suggested that hyperhomocystinemia may be associated with dissection.<sup>[14]</sup> Hyperlipidemia and other vascular risk factors are not related to dissection.

Hyperkinetic movement disorder is usually expected with lesions in the basal ganglia and thalamus. The pathogenic mechanism causing limb shaking is not clear. Baumgartner suggested that vasomotor reactivity was exhausted in cerebral hemispheres opposite the involuntary movements, showing that transient hemodynamic insufficiency may be the cause of limb shaking TIA.<sup>[15]</sup> It may be a release phenomenon similar to clonic jerks in syncope.<sup>[12]</sup> It has been proposed that inability to maintain postural tone due to hypoperfusion might lead to shaking of the limb.<sup>[16]</sup> A recent article that reported a cortical myoclonus as limb shaking TIA proposed that ischemia-induced neuronal hyperexcitability of cerebral cortex might be the cause of the limb shaking.<sup>[17]</sup>

In conclusion, limb shaking is a symptom of carotid artery disease (CAD) that can lead to severe cerebral infarction. It can also be observed with dissection of carotid artery. It is important to recognize this unusual symptom in order to begin appropriate treatment of the ischemic event.

**Conflict of Interest:** None declared.

**Peer-review:** Externally peer-reviewed.

## References

1. Baquis GD, Pessin MS, Scott RM. Limb shaking-a carotid TIA. *Stroke* 1985;16(3):444–8. [Crossref](#)
2. Firlirk AD, Firlirk KS, Yonas H. Physiological diagnosis and surgical treatment of recurrent limb shaking: case report. *Neurosurgery* 1996;39(3):607–11. [Crossref](#)
3. Kowacs PA, Troiano AR, Mendonça CT, Teive HA, Werneck LC. Carotid transient ischemic attacks presenting as limb-shaking syndrome: report of two cases. *Arq Neuropsiquiatr* 2004;62(2A):339–41. [Crossref](#)
4. Ma QF, Huang Q, Zhang Q, Fan CQ, Guo XH, Wu J. Association between clinical features and prognosis of patients with limb-shaking transient ischemic attack. *Chin Med J (Engl)* 2013;126(22):4354–7.
5. Persoon S, Kappelle LJ, Klijn CJ. Limb-shaking transient ischaemic attacks in patients with internal carotid artery occlusion: a case-control study. *Brain* 2010;133(Pt 3):915–22. [Crossref](#)
6. Ali S, Khan MA, Khealani B. Limb-shaking Transient Ischemic Attacks: case report and review of literature. *BMC Neurol* 2006;6:5.
7. Schulz UG, Rothwell PM. Transient ischaemic attacks mimicking focal motor seizures. *Postgrad Med J* 2002;78(918):246–7.
8. Alonso JV, del Pozo FJ, Simón JC, Valenzuela S, Perez Gomez F, Lopera E. Limb-Shaking TIA Presenting as Hemichorea-Hemiballismus: TIA Chameleons Diagnostic Challenge in the Emergency Department. *J Stroke Cerebrovasc Dis* 2015;24(11):327–31.
9. Khan S, Chang E, Saniuk G, Shang T. Bilateral asymmetrical asterix as limb-shaking transient ischemic attack in bilateral carotid stenosis. *J Stroke Cerebrovasc Dis* 2015;24(1):29–30.
10. Shimizu T, Hiroki M, Yamaoka Y, Kato S, Suda M, Ide K, et al. Alternating paroxysmal hemiballismus-hemichorea in bilateral internal carotid artery stenosis. *Intern Med* 2001;40(8):808–12.
11. Gerstner E, Liberato B, Wright CB. Bi-hemispheric anterior cerebral artery with drop attacks and limb shaking TIAs. *Neurology* 2005;65(1):174. [Crossref](#)
12. Han SW, Kim SH, Kim JK, Park CH, Yun MJ, Heo JH. Hemodynamic changes in limb shaking TIA associated with anterior cerebral artery stenosis. *Neurology* 2004 Oct 26;63(8):1519–21. [Crossref](#)
13. Khan A, Beletsky V, Kelley R, Ehsan T. Orthostatic-mediated hypoperfusion in limb-shaking transient ischemic attack. *J Neuroimaging* 1999;9(1):43–4. [Crossref](#)
14. Rosner AL. Spontaneous cervical artery dissections and implications for homocysteine. *J Manipulative Physiol Ther* 2004;27(2):124–32. [Crossref](#)
15. Baumgartner RW, Baumgartner I. Vasomotor reactivity is exhausted in transient ischaemic attacks with limb shaking. *J Neurol Neurosurg Psychiatry* 1998;65(4):561–4. [Crossref](#)
16. Yoon Y, Kim JS. Limb-shaking TIA: an asterix. *Neurology* 2013;81(10):931–2. [Crossref](#)
17. Muraga K, Suda S, Nagayama H, Okubo S, Abe A, Aoki J, et al. Limb-shaking TIA: Cortical myoclonus associated with ICA stenosis. *Neurology* 2016;86(3):307–9. [Crossref](#)