Case Report

Acute-Onset Painful Restless Legs Syndrome after Ischemic Stroke: A Case Report

Huan-Jan Lin, Jung-chi Tsou, Hung-Chang Kuo

Restless legs syndrome (RLS) is a common neurological disorder with two major clinical manifestations: dysesthesias in the legs and irresistible leg movements. The symptoms usually develop insidiously with slow progression. However, acute-onset RLS after stroke has been reported, and RLS may rarely present with pain. We report a 62-year-old man who experienced acute-onset right hemiparesis, followed by stabbing pain over bilateral legs after 3 days. Ischemic stroke was confirmed by brain computed tomography (CT). Other serious comorbidities were excluded by physical examination and laboratory studies. The painful leg was initially treated with clonazepam 0.5 mg HS and morphine, followed by small increments of clonazepam dosage up to 1 mg HS for satisfactory pain control. In conclusion, RLS can develop acutely after ischemic stroke with presentation of severe pain. Careful history taking and neurological examination enable accurate diagnosis and timely treatment.

Key words: painful restless legs syndrome, ischemic stroke

Introduction

Restless legs syndrome (RLS) is a common neurological condition characterized by uncomfortable and unpleasant sensations deep in the legs that are relieved by movement. The symptoms of RLS, which occur increasingly with age, usually develop insidiously and progressively. Here, we reported a case with acute-onset bilateral leg stabbing pain after acute ischemic stroke.

Case Report

A 62-year-old man, who had a history of coronary artery disease after stent placement, hyperlipidemia, and hypertension, presented to our emergency department (ED) with acute-onset right limb weakness for three days. He also complained of general malaise with mild chest tightness, accompanied by bilateral leg soreness at ED. Besides, he experienced occasional irresistible movement over his legs. He

From the Department of Neurology, E-Da Hospital, and I-Shou University, Kaohsiung, Taiwan.
Received: May 3, 2017 Accepted: July 14, 2017
Address reprint request and correspondence to: Huan-Jan Lin, Department of Neurology, E-Da Hospital/I-Shou University, Kaohsiung City 82445, Taiwan.
Tel: +886-7-6150011 ext. 252884, Fax: +886-7-6150940, E-mail: blueguitar7595@gmail.com

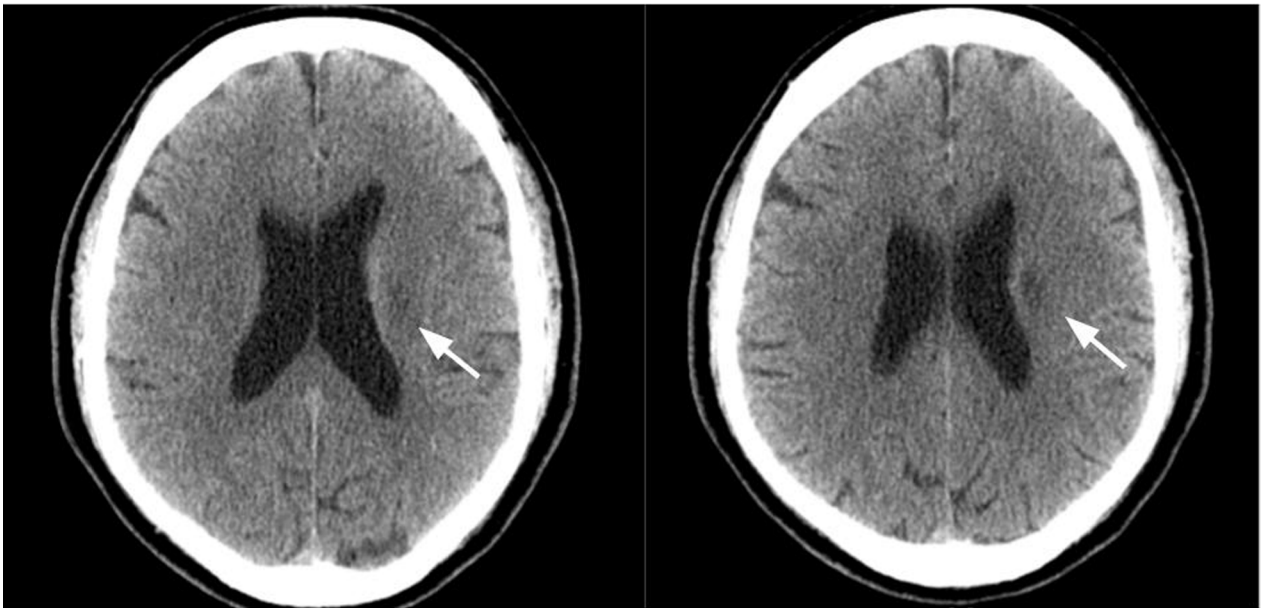

Fig. 1 Brain CT showed left corona radiata hypodense lesion.

could still walk independently unaided. He denied history of recent trauma or leg pain. Neurological examination demonstrated right hemiparesis with muscle power grade 4 in both right upper and lower limbs. Laboratory studies showed hyperglycemia (serum glucose: 473 mg/dL). Cardiac enzyme was within normal range and electrocardiogram (ECG) showed no ST-T change. Chest CT demonstrated no aortic dissection, whereas brain CT revealed a left corona radiata hypodense lesion (Fig. 1). He was then admitted to neurology ward for further treatment.

Later in the evening, he reported acute-onset bilateral leg severe stabbing pain extending from thighs to feet when lying on bed or sitting on chair. The pain was persistent and occasionally aggravated. Visual Analogue Scale was 10 according to the information provided by the patient. The pain, which could be partially relieved by vigorous movement of legs, kept him restless. Physical examination did not show local heat, swelling over leg joints, muscle tenderness, or coldness. Besides, pulsations over bilateral popliteal fossae and dorsalis pedis were intact. Repeated neurological examination showed no notable change in muscle power. Pin-prick and joint position sensation as well as deep tendon reflex were also normal. The pain was refractory to acetaminophen and tramadol treatment. Serum biochemistry study showed normal cardiac enzyme and renal function. Tracing back his medical history, he had no history of medication including antipsychotics or hypnotics. With the diagnosis of restless leg syndrome (RLS), clonazepam 0.5 mg was prescribed empirically but only partial pain relief was achieved. Intramuscular morphine 5 mg was given before satisfactory pain relief. In the following days, he still experienced leg pain while resting in bed. The pain was accompanied by occasional general malaise and akathisic behavior that seemed to be more severe at night. Laboratory findings were normal without evidence of anemia or renal dysfunction (Hemoglobin 17.8 g/dL and serum creatinine 1.4 mg/dL). Electroencephalography demonstrated neither epileptiform discharge nor cortical dysfunction. We slowly adjusted clonazepam dosage to 1 mg HS. Since his symptoms gradually improved, further nerve conduction study and brain MRI were not performed. Rehabilitation program was started

after stabilization of his general condition.

Discussion

Idiopathic RLS is characterized by its insidious onset and progressive course with typical dysesthesia usually described as crawling or itching sensation. By contrast, the unusual manifestations of acute onset and severe pain in our patient led us to suspect secondary causes of RLS and the possible development of ischemic complications. RLS, also known as Willis-Ekbom disease (WED), is a disorder characterized by an urge to move the legs and is usually accompanied or caused by uncomfortable and unpleasant sensations in the legs. Typical worsening of symptoms occurs during periods of rest or inactivity in the evening/night, and is partially or totally relieved by movement, such as walking or stretching. During sleep, most patients with RLS/WED have characteristic limb movements, called periodic limb movements of sleep (PLMS), which may be associated with arousal from sleep.

RLS should be distinguished from a variety of other situations causing abnormal leg movement, including volitional movement, akathisia, nocturnal leg cramps, positional leg discomfort, and leg pain induced by vasogenic or neurogenic condition. In our case, we excluded other possible causes in the first place with close observation as well as complete physical and neurological examination.

More than half of RLS patients have family history, and most of them are inherited in an autosomal dominant pattern. Although some potential genes predisposing to the condition have been identified,[1] common secondary causes should first be carefully evaluated, including iron deficiency, renal failure, neuropathy, spinal cord pathology, pregnancy, multiple sclerosis, and possibly Parkinson disease (PD) and essential tremor.

Post-stroke RLS have been reported in some case studies. The prevalence of stroke-related RLS is around 12%, higher than the average of 3 – 5% in the general population, and twice as high in women when compared with that in men. The frequency of RLS increased among women during pregnancy, especially during the last trimester. It has been proposed that sex hormones may play a role in the development of stroke-related RLS.[2]

Most of the RLS-related strokes are associated with the development of lacunar syndromes with relatively distinct symptom complex, including pure sensory/pure motor stroke, mixed sensorimotor stroke, and dysarthria-clumsy-hand syndrome. The predilection sites of stroke related to RLS include basal ganglia, corona radiata, internal capsule, thalamus, and medial pons. Importantly, in patients with stroke-related RLS, their RLS symptoms are not correlated with the development of sensorimotor deficits, which are unilateral and may improve before the RLS is under control.

The mechanism by which RLS develops after stroke remains controversial. Post-stroke RLS might emerge from interrupted presumably descending "inhibitory" effect on the brainstem generator, causing a supraspinal disinhibition.[3]

Some functional MRI studies also revealed increased activity in the cerebellum and thalamus, and sometimes in the red nucleus and reticular formation, without elevation in cortical activity. The findings suggest that disruption of the basal ganglia-brainstem axis by lesions of the subcortical brain areas may contribute to stroke-related RLS symptoms. Besides, some experts proposed that the development of RLS in patients with pontine infarction might be caused by pathological recruitment of propriospinal or segmental spinal reflexes, bearing some similarities to the pathophysiology of propriospinal myoclonus.[4]

On the other hand, the pathophysiology of the development of abnormal sensation in RLS is not well understood. Despite the significant impact of sensory symptoms on the quality of life, they remain much less well understood

than motor symptoms and sleep disturbances in RLS. Although pain is not a usual presentation, severe sharp and stabbing pain requiring analgesics use in rare cases have been reported. The effectiveness of analgesics in treating RLS supports the concept of abnormal sensory modulation in RLS and suggests an overlap between pain modulatory pathways and sensory disturbances.[5,6]

Interestingly, the correlation and differentiation between akathisia and RLS have been discussed. They both have similar symptoms and signs. Inner restlessness and the urge to move with relief resulting from movement of body parts are the core symptoms in both akathisia and RLS. Some investigators thus regard RLS as a ‘‘focal akathisia”.[4] In our case, the patient presented with painful leg and irresistible movement with occasional general discomfort and akathisic movement. As a result, the two phenomena may coexist and share similar pathophysiology.

In conclusion, this case implies that RLS can be provoked or induced by acute ischemic stroke. Although newly developed akathisia, painful and irresistible movement of the legs may lead to the diagnosis of RLS, complete physical and neurological examination with adequate laboratory studies may help in making accurate diagnosis and implementing effective treatment.

References

1. Vilariño-Güell C, Soto AI, Young JE, et al: Susceptibility genes for restless legs syndrome are not associated with Parkinson disease. Neurology 2008;71:222-3.
2. Lee SJ, Kim JS, Song IU, et al: Poststroke restless legs syndrome and lesion location: anatomical considerations. Mov Disord 2009;24:77-84.
3. Ruppert E, Kilic-Huck U, Wolff V, et al: Restless legs syndrome as a first manifestation of a cerebral infarct. J Clin Sleep Med. 2014;10:1037-8.
4. Han SH, Park KY, Youn YC, et al: Restless legs syndrome and akathisia as manifestations of acute pontine infarction Case Reports. J Clin Neurosci 2014;21:354-5.
5. Karroum EG, Golmard JL, Leu-Semenescu S, et al: Painful restless legs syndrome: a severe, burning form of the disease. Clin J Pain 2015;31:459-66.
6. Winkelman JW, Gagnon A, Clair AG. Sensory symptoms in restless legs syndrome: the enigma of pain. Sleep Med. 2013;14:934-42.