

Positional Vertigo After Isolated Cerebellar Nodulus Stroke: A Report of 3 Cases

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We report 3 cases (69-year-old man, 71-year-old man, and 82-year-old woman) of isolated cerebellar nodulus stroke patients, who presented with positional vertigo alone that lasted only for 2-4 days. Brain magnetic resonance imaging helped diagnosing these cases. Although rare, clinicians should be aware of isolated cerebellar nodulus stroke, when facing with patients with paroxysmal vertigo of acute onset.

Key Words: Positional nystagmus—cerebellar nodulus—stroke—Positional vertigo—cerebellar nodulus—stroke

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Introduction

Positional vertigo is common in general practice. Besides persistent vertigo, positional vertigo needs evocation maneuver to diagnose objectively. Among the etiologies, benign paroxysmal positional vertigo (BPPV) is the most common, which is thought to be due to inertial changes in endolymph caused by trapped otolithic debris in the semicircular canal. In contrast, brain diseases also cause positional vertigo, and the ratio of peripheral versus brain etiology seems approximately 1000:1.¹ In brain etiologies, lesions affect the posterior fossa, the fourth ventricle, the cerebellum; as the minimum lesion, lower cerebellar vermis^{2,3} and the nodulus are documented.⁴⁻⁶ In the nodulus etiology, positional vertigo may accompany no other neurologic deficits. Further, in stroke cases, positional vertigo lasts only for hours to days.⁴ In such cases, early brain imaging is extremely important to diagnose patients properly. Here we add 3 cases of cerebellar nodulus stroke diagnosed by brain magnetic resonance imaging (MRI).

Case Report

Case 1

A 71-year-old man with mild type 2 diabetes (HbA1c 6.5) had an acute onset of severe positional vertigo without auditory or other neurologic symptoms. By a local general physician, he was referred to and admitted to our hospital as having BPPV. He had apogeotropic (direction-changing) horizontal positional nystagmus, together with nausea/vertigo, at supine roll test, and right-beating nystagmus on lying down and head-bending. Other neurological examinations, including diplopia, ophthalmoparesis, deafness, dysarthria, limb ataxia, limb weakness, or sensory loss, were completely normal. Laboratory examinations were normal except for mild diabetes. Brain 3T axial slices, diffusion-weighted images of MRI showed a 5 mm lacunar infarct at the right cerebellar nodulus (Fig 1, A). His vertigo and nystagmus resolved within 4 days, and we could not perform a vestibular function test. On the 12th admission day after the initial stroke management, he was successfully discharged from hospital.

Case 2

A 69-year-old, previously-healthy man had an acute onset of positional vertigo without auditory or other neurologic symptoms, and he was admitted to our hospital, as having BPPV, since he had vertigo only when he turned/shaked his head. He had apogeotropic (direction-changing) horizontal positional nystagmus, together with nausea/vertigo, at supine roll test, and down-beating nystagmus on lying down and head-bending. He had no other neurologic signs. Laboratory examinations were normal except for mild diabetes. Brain MRI showed a 6 mm lacunar infarct at the left cerebellar nodulus

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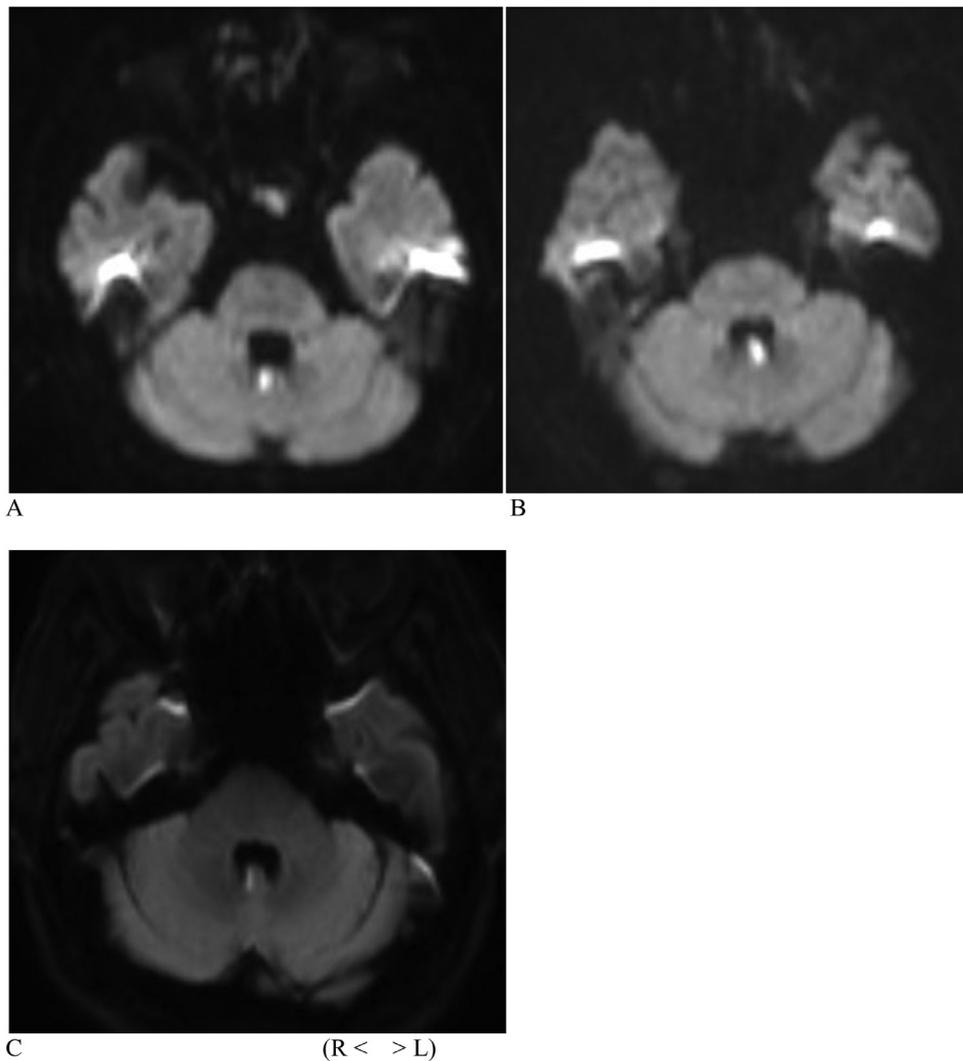


Fig. 1. MRI of the patients. A. Case 1, B. Case 2, and C. Case 3. Diffusion-weighted image, axial slice, of magnetic resonance imaging.

(Fig 1B). His vertigo and nystagmus resolved within 3 days, and we could not perform a vestibular function test. On the seventh admission day after the initial stroke management, he was discharged from hospital.

Case 3

A 82-year-old woman with a history of hypertension had an acute onset of positional vertigo without auditory or other neurologic symptoms. By a local general physician, a day after the onset, she was referred to and admitted to our hospital as having BPPV. On admission, we could not observe nystagmus at supine roll test or on lying down and head-bending. However, after each maneuver, she complained vertigo that lasted for a

couple of minutes. She had no other neurologic signs. Laboratory examinations were normal except for mild diabetes. Brain MRI showed a 4 mm thin lacunar infarct at the left cerebellar nodulus (Fig 1, C). Her vertigo disappeared completely within 12 hours after admission. After the initial stroke management, she was discharged from hospital.

Discussion

Positional vertigo does occur without other neurological deficits in brain diseases, and in stroke cases, it may last only for hours to days. In our case 3, we could not detect any neurologic abnormality at her admission to our hospital. However, we were able to visualize small stroke

at the cerebellar nodulus. As far as we knew, this case seems to have the minimum neurologic deficit as reported thus far, caused by cerebellar nodulus stroke.

Recent clinical and experimental studies show that cerebellar nodulus and uvula have a direct reciprocal innervation with the vestibular nuclei. Nodular Purkinje cells respond to tilt/rotation stimuli. Lesions in these pathways over-activate the responses, which might lead to positional nystagmus/vertigo in the patients.

In contrast to positional nystagmus/vertigo in tumors or cerebellar atrophy (multiple system atrophy-cerebellar type⁷ or spinocerebellar ataxia⁸), positional nystagmus/vertigo in stroke may last only for hours to days. It is therefore important that we should not easily consider positional nystagmus/vertigo as BPPV. We should always be cautious whether the patient has neurological symptoms/signs suggesting central etiology. In that occasion, early brain imaging is important to diagnose such patients properly.

In summary, we report 3 cases (69-year-old man, 71-year-old man, and 82-year-old woman) of isolated cerebellar nodulus stroke patients, who presented with positional vertigo alone that lasted only for 2-4 days. Brain magnetic resonance imaging helped diagnosing these cases. Although rare, clinicians should be aware of isolated cerebellar nodulus stroke, when facing with patients with paroxysmal vertigo of acute onset.

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R. Sakakibara had a role in the study concept and design, the acquisition of subjects and/or data, the analysis and interpretation of data, and the preparation of manuscript.

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