

Reverse Lhermitte's Phenomenon Provoked by Cervical Cord Compression

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Abstract-

Purpose: Lhermitte's phenomenon (LP) is a rare manifestation, which is defined when a sudden electric-shock sensation transmitted down the spine induced by neck flexion; however, the reverse LP is defined when symptoms are induced by neck extension, not flexion. Because reports of LP are limited in the Taiwan literature, we report this case.

Case Report: A 74-year-old woman presented to our emergency department with sudden onset of right neck pain when extending the neck. The pain mimicked an electric shock and radiated to the left shoulder. Imaging showed spondylosis and spondylolisthesis without any spinal canal stenosis. A neck collar was recommended, and the strange phenomenon did not recur over the following year. However, long-term follow-up and aggressive workup are recommended to rule in or rule out the possibility of multiple sclerosis in the future.

Conclusion: Although LP represents spinal demyelination disorders, reverse LP is induced by extrinsic compression of the cervical cord, and neck collar immobilization rather than intravenous or oral medication is recommended.

Key words: reverse Lhermitte's phenomenon, spondylosis, spondylolisthesis, multiple sclerosis, neck collar immobilization

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INTRODUCTION

Lhermitte's phenomenon (LP), also known as "Lhermitte's sign", "barber chair sign" or "barber shop sign"⁽¹⁾, is a rare manifestation. It is characterized by a sudden electric-shock sensation with intense pain passing down

from the cervical spine to the upper or lower limbs induced by cervical flexion⁽¹⁾. It generally spreads symmetrically and sometimes asymmetrically, but never corresponds in distribution to any spinal dermatome. LP has several variant forms, and each has a different pathological significance: (1) typical LP; (2) post-trau-

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matic LP, which follows contusion of the spinal cord from neck trauma; (3) reverse LP, which is induced by extrinsic compression of the cervical spinal cord during neck extension; (4) inverse LP, which is upward moving paresthesia induced by neck flexion⁽¹⁾. Because reports of LP are limited in the Taiwan literature, we report this case.

CASE REPORT

A 74-year-old woman denied any systemic disease or history of trauma. She presented to our emergency department with sudden onset of right neck pain when extending the neck. The pain mimicked an electric shock and radiated to the left shoulder. Physical examination showed a rigid protrusion at the posterior part of the neck. The muscle power was grade 4 (Medical Research Council Scale) in the four limbs. Deep tendon reflexes in all four limbs were symmetrically normal. Both sides of

her body, including the limbs and trunk, were sensitive to pain on a pinprick test (10/10). There was no neurological focal sign. Cervical radiographs revealed spondylosis and grade I anterolisthesis at the C3/4 and C4/5 levels when she flexed her neck (Fig. 1A, arrow head). After 30 mg ketoprofen was administrated intravenously, the strange phenomenon recurred until neck immobilization was recommended.

She was transferred to our neurosurgical clinic where computed tomography showed a reversed lordotic curve of the cervical spine and grade I anterolisthesis at the C3/4 and C4/5 levels (Fig. 1 B&C, arrows). Magnetic resonance imaging demonstrated annular bulging at the 3rd ~ 7th intervertebral discs, causing mild thecal sac indentation (Fig. 2, dotted circle), but no spinal canal stenosis. A neck collar was recommended to immobilize her neck. Over the following year, the radiating neck pain did not recur, and the muscle power recovered to grade 5 in the four limbs.

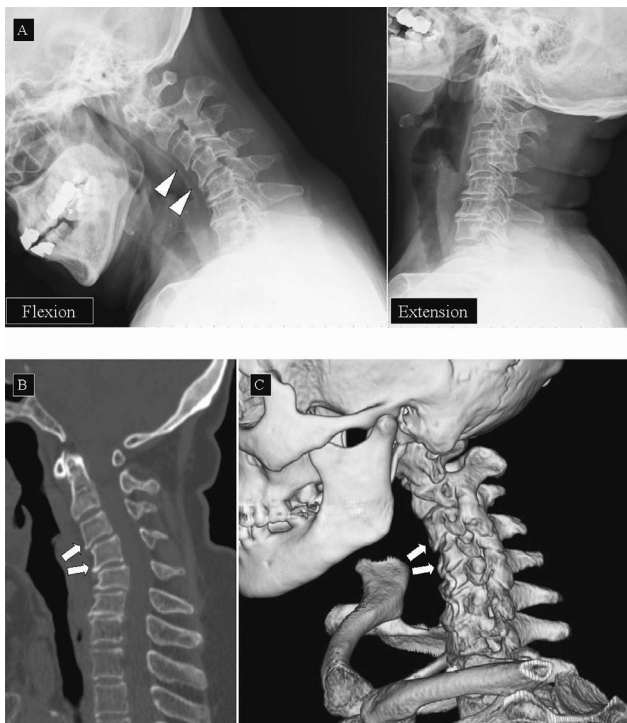


Figure 1. A: Cervical flexion and extension radiographs. B: Bone window (W 2,000, C 350) on sagittal computed tomography. C: Volume rendering on computed tomography.

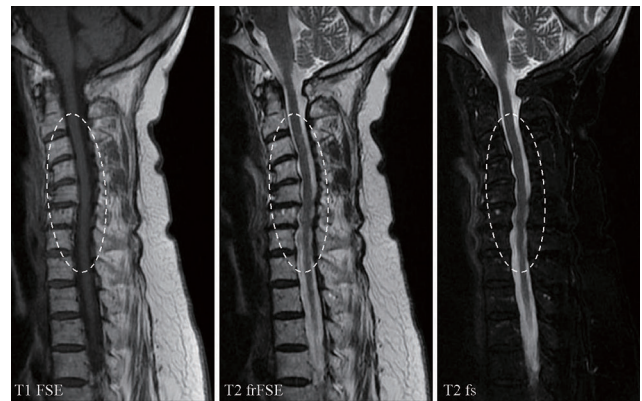


Figure 2. Magnetic resonance imaging, including a T1 fast spin echo sequence (TR/TE/excitation: 667/11.2/1), T2 fat relaxation fast spin echo sequence (TR/TE/excitation: 3100/100.7/1), and T2 fat saturation sequence (TR/TE/excitation: 2933/116.4/1).

DISCUSSION

LP has been used as an eponym demonstrating ectopic sensory discharges from the mechanical stimulation of the abnormally excitable demyelinated central and peripheral sensory axons since 1932⁽²⁾. It was experi-

enced by 33.3 % of 114 patients with multiple sclerosis in one study, and in 16 % it occurred in the first episode⁽³⁾. However, it should not be regarded as pathognomonic of multiple sclerosis because it does occur with various other conditions affecting the cervical cord and cervicomedullary junction, such as radiogenic myelopathy⁽⁴⁾, trauma⁽⁵⁾, neoplasm⁽⁶⁾ and spondylosis/discopathy⁽⁷⁾. In addition, it can be induced by other systemic conditions such as chemotherapy⁽⁸⁾, vitamin B 12 deficiency⁽⁹⁾, bone marrow transplantation⁽¹⁰⁾, Behcet's disease⁽¹¹⁾ and herpes zoster infection⁽¹²⁾. As LP describes a subjective sensation rather than an objective finding, it would be more properly designated a symptom than a sign⁽³⁾; besides, Lhermitte's syndrome has represented anterior internuclear ophthalmoplegia, which is a different symptomatology from LS⁽¹³⁾.

In our case patient, the pain and radiating electric shock induced by neck extension rather than neck flexion; thus, reverse LP was confirmed. The patient's neck flexion radiographs showed more obvious anterolisthesis than neck extension radiographs in our patient (Fig. 1A); the computed tomography demonstrated the reverse lordotic curve of cervical anterolisthesis has distorted the spinal cord (Fig. 1B), but magnetic resonance imaging demonstrated thecal sac indentations secondary to degenerated spine but no evidence of demyelination, and the cervical structural deformity had not yet compressed the spinal cord (Fig. 2). We suggested the mechanism of reverse LP was compression of the cervical spinal cord by the ligamentum flavum in the extension position, not by the listhetic vertebral body in the flexion position⁽¹⁴⁾; besides, the transient cervical spinal cord compression contributed to the symmetrically decreased muscle power (grade 4) over both sides.

Unlike that in multiple sclerosis, LP from other causes is a transient, self-limiting, benign disorder⁽³⁾. The reverse LP in our patient was successfully treated with neck collar immobilization, so surgery was not recommended. Possibly, the cervical spinal cord oligodendrocytes can recover, and myelin synthesis can be resumed, so that the phenomenon will not recur, and the muscle power recovered to grade 5 in all limbs. Although the following year was uneventful, long-term follow-up is

recommended to rule out the possibility of multiple sclerosis in the future. In conclusion, patients with reverse LP often concerns about this condition. Neck collar immobilization rather than intravenous or oral medication is recommended if cervical cord compression is impressed.

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