

## CLINICAL NOTE

# Leg Edema With Deep Venous Thrombosis-Like Symptoms as an Unusual Complication of Occult Bladder Distension and Right May-Thurner Syndrome in a Stroke Patient: A Case Report

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**ABSTRACT.** Im S, Lim S-H, Chun H-J, Ko Y-J, Yang B-W, Kim H-W. Leg edema with deep venous thrombosis-like symptoms as an unusual complication of occult bladder distension and right May-Thurner syndrome in a stroke patient: a case report. *Arch Phys Med Rehabil* 2009;90:886-90.

Overt bladder distension can compress the iliac vessels and result in lower extremity swelling mimicking deep venous thrombosis (DVT). This phenomenon has been reported in patients with bladder outlet obstruction due to prostatism but no report has been made in relation to poststroke urinary retention (UR). The authors experienced a rare case of abrupt leg edema with DVT-like symptoms due to iliac vein compression by an overdistended bladder that had developed after cerebrovascular stroke. A 74-year-old woman with left striatocapsular infarction and situs inversus presented with severe right leg swelling. Imaging studies revealed external compression of the right iliac veins by an overdistended bladder and underlying May-Thurner syndrome (MTS). The presence of situs inversus totalis resulted in the rare clinical finding of a right-sided MTS. The patient's symptoms were largely attributable to external compression of right iliac veins by bladder distension and they resolved completely after prompt bladder drainage. Follow-up imaging findings showed complete regression of right external iliac vein stenosis. This case provides the first description of lower extremity swelling manifest as an unusual complication from UR in a stroke patient. Proper and strict bladder screening with appropriate management should be implemented as important therapeutic components during the rehabilitative management of stroke patients.

**Key Words:** Iliac vein; Rehabilitation; Situs inversus; Stroke; Urinary retention; Venous thrombosis.

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**I**N CONJUNCTION WITH THE MANY neurologic deficits that can result from stroke, various medical issues can complicate the rehabilitation process and impede a patient's ability to resume an independent active life.<sup>1</sup> Among these medical issues, urinary symptoms such as urinary incontinence and UR are known to have a high prevalence in stroke survivors.<sup>2</sup>

Within 72 hours of the cerebrovascular event, UR can occur in 47% of stroke patients,<sup>3,4</sup> and spontaneously resolve within 4 weeks.<sup>5</sup> Although the neurophysiologic mechanism underlying poststroke UR is unknown, early identification and implementation of appropriate management are important, because complications can range from urinary incontinence to recurrent urinary tract infections<sup>6</sup> or renal impairment,<sup>7</sup> and can further decompensate detrusor function secondary to the overstretching of detrusor fibers.<sup>5</sup> Urinary symptoms are often associated with significant impact on patients' quality of life and proper evaluation and management of poststroke UR have become integral parts of the rehabilitative management of stroke patients.<sup>4,5</sup>

Leg edema in the elderly can be caused by systemic illnesses such as heart failure, liver disease, malnutrition, and thyroid disease, or by local conditions such as a pelvic tumor, infections, trauma, or vein compression.<sup>8</sup> In stroke patients, leg edema is often considered to be diagnostic of DVT. In fact, DVT is known to affect from 27% to 75% of stroke patients during the first 2 weeks after stroke<sup>9,10</sup> and the incidence of de novo DVT in patients receiving rehabilitation has been reported to range from 5% to 11%.<sup>11,12</sup> In the elderly, although it is not as common as DVT, leg swelling can also be caused by external compression of iliac vein by urinary bladder distension and can manifest clinical symptoms similar to DVT. To distinguish this condition as a possible causative factor of abrupt leg swelling in the elderly is important, because failure to do so can lead to erroneous diagnoses and management. Case reports on this topic have pointed out that leg swelling due to bladder distension is most often associated with benign prostatic enlargement,<sup>13-16</sup> and less commonly, with diabetic autonomic bladder dysfunction<sup>17</sup> or chronic neuropathic bladder after spinal cord injury.<sup>18</sup> However, no previous report has related this condition to poststroke UR.

In this case report, we describe a patient with left striatocapsular infarction who presented with right lower extremity swelling caused by compression of the right iliac vein by urinary bladder distension, and whose venous drainage was further impeded by the underlying presence of an inverted form of right MTS.

## CASE DESCRIPTION

A 74-year-old woman who developed right side hemiparesis from left striatocapsular infarction was admitted for central type facial palsy, right side motor weakness, and severe deficits

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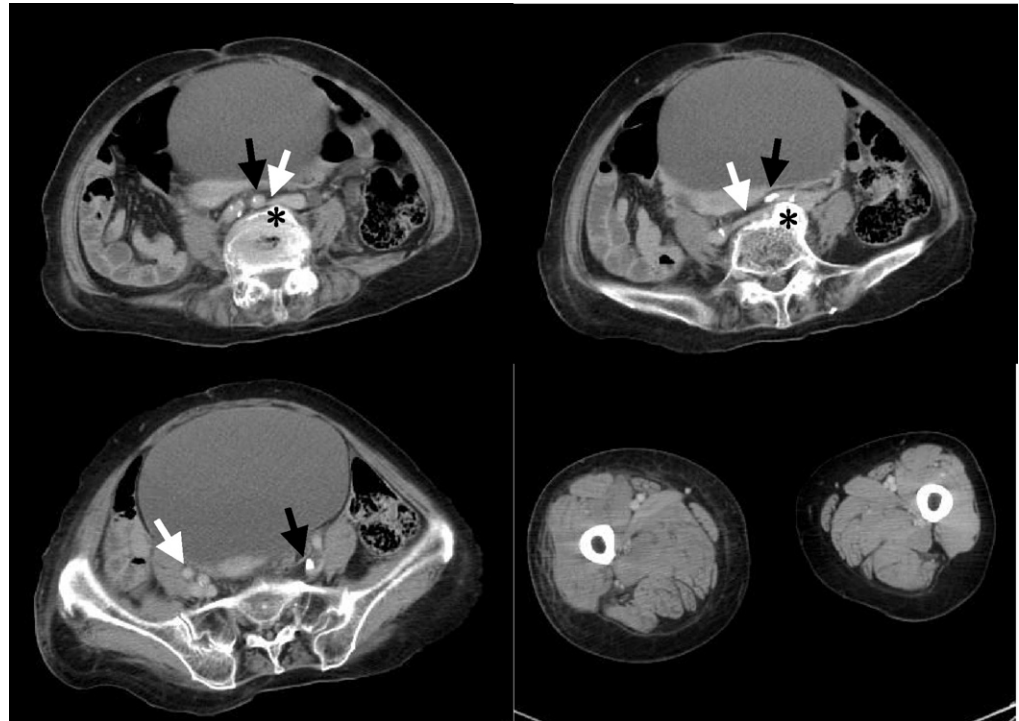
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## List of Abbreviations

CT	computed tomography
DVT	deep venous thrombosis
MTS	May-Thurner syndrome
UR	urinary retention



**Fig 1.** Contrast-enhanced CT performed on initial evaluation after the patient developed sudden right lower-extremity swelling shows marked distension of the bladder compressing the right iliac veins. The right common iliac vein (white arrows) is also compressed between the left common iliac artery (black arrows) and bony spur from the fifth lumbar vertebral body (asterisks). The right thigh shows diffuse soft tissue swelling with subcutaneous fat infiltration, suggesting edema (left lower panel). No evidence of DVT is detected.

in cognition and perception. She was initially aphasic and disoriented with drowsy mentality, and failed to express herself or follow commands appropriately. Right-side weakness severely restricted patient's mobility and rendered her totally dependent. The patient had a previous medical history of hypertension, which had been diagnosed 3 months before, and a history of syncope and a transient ischemic attack 4 months prior to stroke onset. Her previous medications included a nonsteroidal anti-inflammatory drug for degenerative knee arthritis and a calcium channel blocker for hypertension, both of which were discontinued on her admission. She had no previous history of dysfunctional voiding. Her past medical history revealed no previous diagnosis of diabetes mellitus, pelvic surgery, or history of low back pain. At initial evaluation, her chest radiographs revealed the heart located on the right side, and echocardiographic studies showed evidence of dextrocardia.

On the fourth day after stroke onset, the patient was still immobile and was unable to participate in self-transfer activities. On physical examination, she revealed sudden swelling of the right lower extremity. The patient, still aphasic, was unable to express any pain but clearly showed right lower leg discomfort with palpation and range of motion. Abdominal examination was inconclusive due to patient's cognitive impairment and aphasia. Circumferences of the right upper thigh and calf area showed discrepancies of 6.5 and 4cm versus the left side, respectively. Although a clinical diagnosis of DVT was made, laboratory findings for D-dimer were normal and duplex sonography, which showed decreased blood flow in the right leg, failed to reveal any thrombus occluding the lower extremity veins. Contrast-enhanced CT of the pelvis and lower extremity, performed to identify the cause of reduced venous flow, showed a markedly dilated urinary bladder compressing the right iliac vessels (fig 1). At the same time, right common iliac vein was compressed between the left common iliac artery and bony spur from the fifth lumbar vertebral body, which

suggested right MTS. No major pelvic organ abnormality was observed. Conventional ascending venography was performed immediately to detect for any occult thrombus formation and to determine the feasibility of an emergency stent insertion at the right common iliac vein. We also aimed to accurately delineate the anatomic relationship between the vessels and bladder and to assess any possible risk of vessel injury that we may have missed from contrast-enhanced CT images. Findings showed focal severe narrowing of the right external iliac vein due to secondary compression from a distended bladder (fig 2). In addition, the right proximal common iliac vein was not opacified; instead, retrograde collateral veins drained from the right to left internal iliac veins, which corresponded to the MTS shown from the contrast-enhanced CT. Pressure gradients of the right femoral vein and inferior vena cava were 24mmHg. Based on these venography findings, we suspected that distal obstruction at right external iliac vein by the bladder to be the main culprit of lower leg edema, and with no detectable risk of vessel injury, we evacuated the bladder without delay. A Foley catheter was inserted and 1650mL of urine was drained. No complication related to decompression was observed.

Ever since admission, the patient had seemed to self void on diaper without any signs of micturition dysfunction or gross abdominal distension to suggest urinary retention; however, a prompt review of the frequency volume chart showed that her total urine output had steadily been decreasing from the day before she had developed lower-extremity swelling. It is likely that poststroke UR, although detected several days later, had developed insidiously with the onset of stroke and that the patient, without showing any signs to indicate voiding leakage, had overflow incontinence.

Subsequently, with prompt bladder drainage, the right lower-extremity swelling and discomfort began to resolve. A thorough investigation was made to search for the causative factor of UR; abdominal X-ray showed no fecal impaction or bowel gas distension to impede bladder drainage and lumbar X-rays

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