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Critical limb ischemia masquerading as lumbar radiculopathy and internal knee derangement in a diabetic patient:

A Case Report and Literature Review

Hannah Kwannoch Ng

Narrative: Critical limb ischemia, now more broadly classified as chronic limb-threatening ischemia (CLTI), classically presents with rest pain, ischemic ulceration, or gangrene, but atypical presentations can closely mimic musculoskeletal and neurological disease, particularly in patients with type 2 diabetes mellitus (T2DM) who often lack classical claudication.

We report the case of a 64-year-old woman with a 10-year history of T2DM who presented to a Chiropractic clinic with two months of severe, nocturnal right knee and leg pain radiating to the foot, accompanied by sensory disturbance. Lumbar spine and knee magnetic resonance imaging (MRI) demonstrated multilevel degenerative disc disease with mild right L5 nerve root impingement and partial retinacular and meniscal tears, respectively, and the patient was initially managed for presumed lumbar radiculopathy and internal knee derangement.

Clinical examination was notable for warm, non-tender lower limbs without classical ischemic signs, and pain that was disproportionate to the modest imaging abnormalities. A concurrent diagnosis of diabetic nephropathy prompted the treating Chiropractor to suspect underlying peripheral arterial disease; computed tomography angiography and subsequent digital subtraction angiography confirmed a 90% flow-limiting stenosis of the right superficial femoral artery, consistent with CLTI. Percutaneous transluminal angioplasty with drug-eluting stent placement produced complete resolution of the nocturnal rest pain within 48 hours, confirming the vascular etiology. This case demonstrates how coexisting incidental degenerative spine and knee imaging findings can anchor clinicians to musculoskeletal diagnoses and delay recognition of limb-threatening vascular disease, and highlights diabetic nephropathy as a sentinel marker of comorbid peripheral arterial disease.

Clinicians, including chiropractors and other first-contact musculoskeletal providers, should maintain a high index of suspicion for vascular pathology when nocturnal rest pain is disproportionate to imaging findings, particularly in diabetic patients with microvascular comorbidities.

Indexing Terms: critical limb ischemia; chronic limb-threatening ischemia; peripheral artery disease; lumbar radiculopathy; knee internal derangement; diabetic nephropathy; type 2 diabetes mellitus; Chiropractic red flags.

Introduction

> *'... A new diagnosis of diabetic nephropathy should prompt clinicians to consider peripheral artery disease as a sentinel vascular marker. ...'*

Critical limb ischemia, increasingly termed chronic limb-threatening ischemia (CLTI) to reflect its natural history of pain, tissue loss, and limb-threatening potential without revascularisation, represents the most advanced clinical stage of peripheral artery disease (PAD). (1)

PAD disproportionately affects patients with type 2 diabetes mellitus (T2DM): systematic reviews of randomised controlled trials estimate a comorbid PAD prevalence of 12.5% to 22% among people with T2DM, substantially higher than in the general population. (2) Diabetes accelerates atherosclerosis through a combination of endothelial dysfunction, chronic hyperglycaemia, and microvascular injury, and several of its microvascular complications independently predict macrovascular PAD risk. Diabetic nephropathy, in particular, has been shown to be an independent risk factor for PAD in patients with T2DM (3), and additional microvascular complications, including diabetic peripheral neuropathy and retinopathy, further compound this risk. (4, 5) These associations position renal and neuropathic complications as potential sentinel markers that should prompt vascular risk stratification even in the absence of classical claudication.

Distinguishing PAD-related leg pain from neurogenic or musculoskeletal causes is diagnostically challenging because all three conditions can produce radiating leg pain, sensory disturbance, and functional limitation. Classical intermittent claudication, cramping pain in the calf, thigh, or buttock provoked by exertion and relieved by rest, is a comparatively reliable clinical clue, but many patients, particularly those with diabetic neuropathy, present atypically with rest pain, nocturnal pain, or non-exertional symptoms that closely resemble radiculopathy or arthropathy. (6)

The ankle-brachial index remains a simple, accurate bedside tool for confirming or excluding PAD in this setting and should be considered whenever the diagnosis is entertained. (7) Several published cases illustrate how advanced PAD can masquerade as lumbar radiculopathy or sciatica: Lin et al. described three patients with aortoiliac PAD initially treated for radiculopathy after their absent pulses were overlooked, (8) and Feller et al. reported a similar case identified only after a physiotherapist recognised red-flag features and screened for vascular disease. (9) More broadly, musculoskeletal and vascular mimickers of lumbar radiculopathy are well recognised in the orthopedic literature, underscoring the need for a systematic differential diagnosis whenever radicular-appearing leg pain does not fit the expected clinical or imaging pattern. (10)

A further diagnostic pitfall arises when incidental degenerative findings on lumbar spine or knee imaging are mistakenly assumed to be causal. Meniscal tears and other internal derangements are frequently identified on knee MRI in asymptomatic middle-aged and older adults, (11) and knee osteoarthritis features are similarly common in uninjured, asymptomatic populations. (12) Analogous data from the spine literature show that degenerative changes, including disc bulges, protrusions, and annular tears, are highly prevalent on MRI in asymptomatic individuals and increase steadily with age. (13)

Because patients frequently present to Chiropractors and other first-contact musculoskeletal providers before a vascular or systemic diagnosis is considered, these clinicians are well positioned to recognise red-flag features, such as pain disproportionate to imaging findings, that warrant referral for further systemic workup, a role illustrated in previous chiropractic case reports describing serious pathology, including malignancy and nerve tumors, masquerading as spinal pain. (14, 15, 16, 17)

Here we report a case in which a diabetic patient's severe nocturnal leg pain was initially attributed to concurrent lumbar radiculopathy and internal knee derangement identified on MRI, but was ultimately found to represent critical limb ischemia, illustrating how compound incidental musculoskeletal findings can obscure a limb-threatening vascular diagnosis.

Case presentation

A 64-year-old retired woman presented to a Chiropractic clinic with severe right knee pain of approximately two months' duration, on a background of a similar but milder episode two years earlier that had resulted in hospital admission and discharge with analgesics alone. She described the pain as sudden, sharp, and radiating from the right knee down to the foot, accompanied by numbness in the same distribution. The most distressing feature was its nocturnal nature: the pain consistently worsened before sleep and frequently woke her in the early morning. Attacks were unpredictable and rated 8-9/10 in severity, with non-steroidal anti-inflammatory drugs providing only partial relief. She also reported intermittent bilateral hand numbness that she considered less bothersome.

She had previously been treated with physiotherapy and traditional Chinese medicine, achieving only short-term benefit. Her medical history included a 10-year history of T2DM managed with oral hypoglycemic agents. During the course of Chiropractic treatment she was newly diagnosed with diabetic nephropathy, with an estimated glomerular filtration rate indicating 50% of expected renal function. There was no known history of intermittent claudication.

On examination, there was no swelling, erythema, or bruising around either knee, and both lower legs were warm to touch. Palpation of the right knee joint itself did not reproduce her pain. Mild tenderness was noted over the right sacroiliac joint, right quadratus lumborum, and right gluteal muscles, and lumbar spine range of motion was limited but not painful. Knee active, passive, and resisted ranges of motion were full and pain-free. Neurological examination revealed diminished light touch and sharp/dull discrimination in the right leg below the knee. Patellar and Achilles reflexes were 1+ bilaterally, and muscle strength was 5/5 throughout the lower limbs. Straight leg raise was positive on the right, as was the sacroiliac joint spring test. All knee-specific orthopedic tests, including McMurray, valgus/varus stress, and anterior/posterior drawer, were negative.

Investigations

Lumbar spine radiographs showed multilevel degenerative changes, and knee radiographs demonstrated mild osteoarthritis. Given persistent symptoms, the Chiropractor ordered MRI of the right knee and lumbar spine. Knee MRI revealed partial tears of the lateral and medial patellar retinaculum, tendinosis of the semimembranosus tendon, a stress response at the medial collateral ligament, and tiny tears of the posterior horn of the medial meniscus (Figures 1, 2). Lumbar spine MRI showed posterior disc prolapses from L1/2 to L5/S1 with mild bilateral foraminal narrowing, slight impingement of the right L5 nerve root, and a tiny anterior annular tear at L4/5 (Figure 3). Despite these findings, the patient continued to experience severe, nocturnal pain that responded poorly to treatment.

After her nephropathy was diagnosed, the treating Chiropractor raised concern for peripheral vascular disease, and a computed tomography angiogram of the lower limbs was arranged. This demonstrated a significant, flow-limiting stenosis in the right superficial femoral artery, consistent with critical limb ischemia.

Figure 1: Partial tear of lateral patellar retinaculum (LPR) B) Tendinosis changes at semimembranosus tendon (SM)

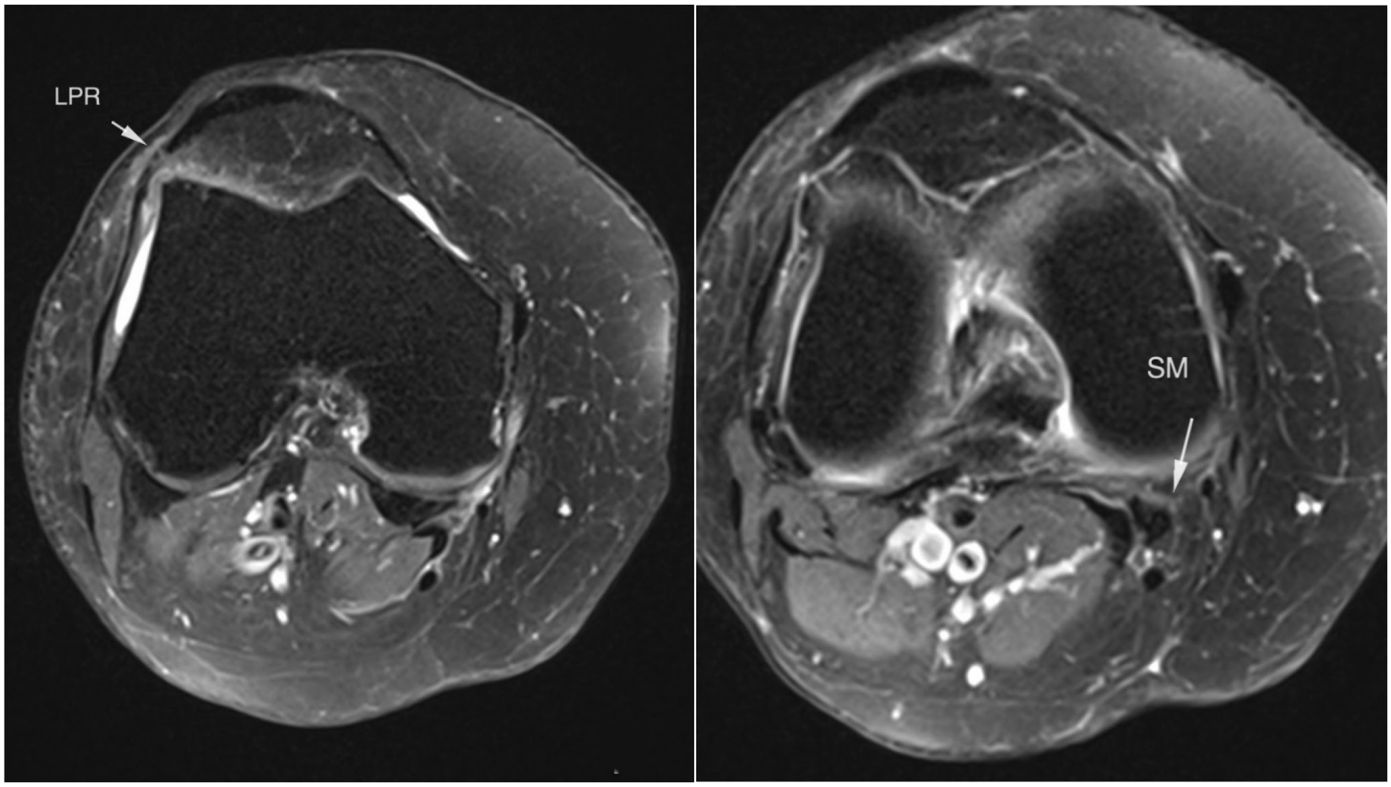


Figure 2: Tiny tears at posterior horn (post) of medial meniscus (MM) B) Stress response at the medial cruciate ligament (MCL)

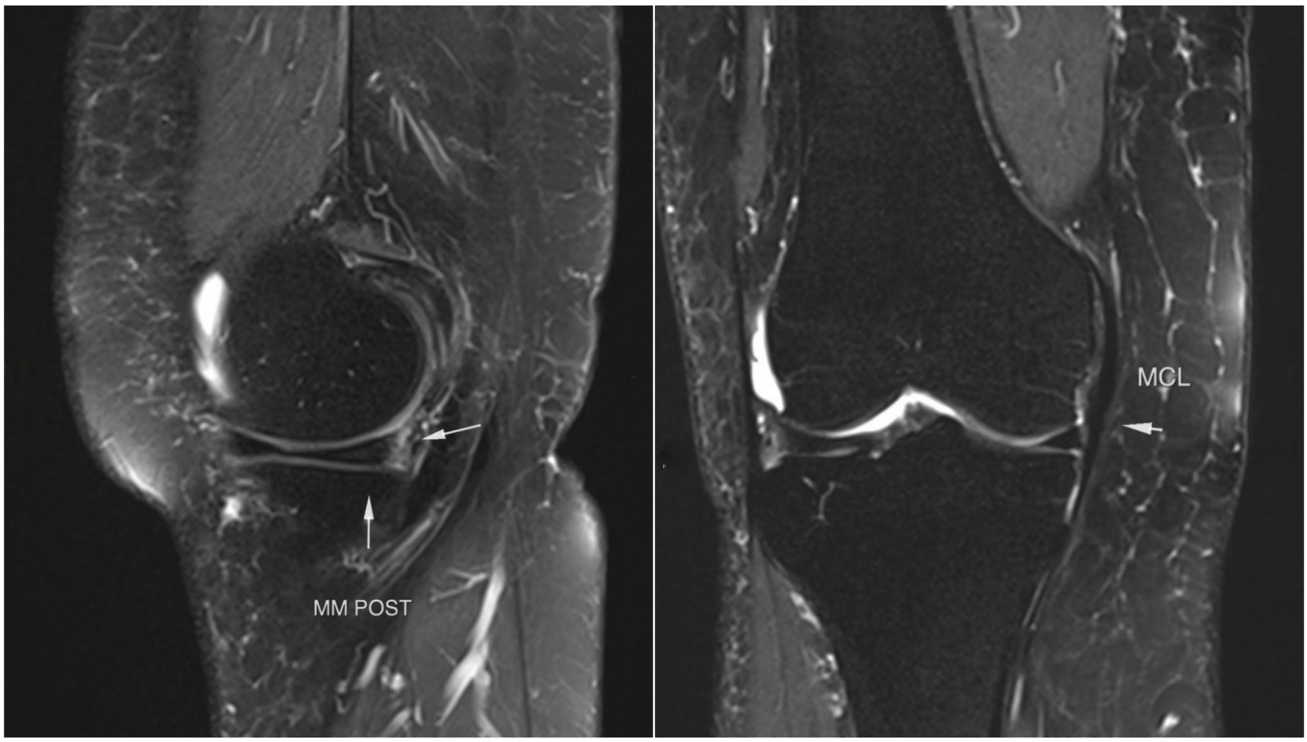


Figure 3: Posterior prolapsed disc from L1/2 to L5/S1, slightly narrowing bilateral intervertebral foramina.



Differential diagnosis

The compound diagnostic picture, comprising imaging abnormalities at both the lumbar spine and knee alongside sensory and vascular risk features, generated a broad differential diagnosis, summarised in Table 1.

Table 1: Differential diagnosis of nocturnal right knee and leg pain in this patient.

Diagnosis	Supporting features	Arguing against
Lumbar radiculopathy (L5)	MRI showed posterior disc prolapse with slight right L5 nerve root impingement; straight leg raise was positive on the right.	Nocturnal rest pain was disproportionate to the mild degree of nerve root impingement; lumbar range of motion was limited but non-painful.
Knee internal derangement	MRI demonstrated partial retinacular and meniscal tears with a medial collateral ligament stress response.	Knee examination was essentially benign, with full pain-free range of motion and negative orthopedic tests; palpation of the joint did not reproduce the pain.
Diabetic peripheral neuropathy	Bilateral sensory loss and diminished patellar and Achilles reflexes were present on examination.	Neuropathy alone rarely produces intense, focal, nocturnal rest pain of this severity (4,6).
Peripheral artery disease with critical limb ischemia	Nocturnal rest pain, new diabetic nephropathy as a vascular risk marker (3), and a flow-limiting stenosis of the right superficial femoral artery on CT and catheter angiography.	Absence of classical intermittent claudication and a clinically warm limb initially lowered suspicion; confirmed as the definitive diagnosis on angiography.

Treatment

The patient was urgently referred to the vascular surgery service. Diagnostic subtraction angiography confirmed a 90% stenosis of the right superficial femoral artery. Successful percutaneous transluminal balloon angioplasty with deployment of a drug-eluting stent was performed. She was commenced on dual anti—platelet therapy (aspirin and clopidogrel) and a high-intensity statin, and her diabetes and blood pressure were optimised.

She also received structured smoking cessation advice in view of a remote smoking history. Chiropractic care, comprising spinal and pelvic adjustments, soft-tissue mobilisation, electrical muscle stimulation, and short-wave therapy over 16 sessions, was paused during the acute vascular intervention and subsequently resumed post-operatively as low-grade supportive care for residual axial lumbar discomfort only; no further manual therapy was directed at the right leg.

Outcome and follow-up

Within 48 hours of revascularisation, the patient's nocturnal rest pain resolved completely, and for the first time in months she slept through the night without waking; the radiating pain and numbness in the leg also disappeared.

At two-week post-operative follow-up, she was walking independently without analgesics, and her diabetic nephropathy remained stable under nephrology follow-up. At three months, she was pain-free and had resumed all activities of daily living. Mild residual lumbar discomfort and bilateral hand numbness persisted, consistent with pre-existing degenerative spine disease and mild diabetic neuropathy, but these were managed conservatively.

She remained under vascular surveillance with regular ankle-brachial index measurements (7) and continued monthly chiropractic care for wellness and gentle spinal mobilisation, though her primary disabling pain had been eliminated entirely by the vascular procedure.

Discussion

This case highlights how coexisting incidental imaging findings at two anatomically unrelated sites, the lumbar spine and the knee, can compound diagnostic confusion and delay recognition of a limb-threatening vascular process. Meniscal and retinacular abnormalities of the kind seen on this patient's knee MRI are common incidental findings in asymptomatic middle-aged and older adults, (11) and radiographic knee osteoarthritis is similarly prevalent in uninjured, pain-free populations. (12)

Degenerative lumbar spine findings, including disc protrusions, foraminal narrowing, and annular tears, are likewise near-ubiquitous on MRI in asymptomatic adults and increase with age, such that their presence does not establish causation for a given patient's pain. (13) In this patient, the mild right L5 nerve root impingement and the minor knee structural findings were plausible but ultimately incidental explanations that anchored clinicians to musculoskeletal diagnoses, delaying recognition that her pain pattern, severe, nocturnal, and disproportionate to imaging severity, was in fact vascular in origin.

A striking feature of this case is the absence of classical ischemic signs: both lower limbs were warm to touch, and there was no history of intermittent claudication, findings that would ordinarily lower clinical suspicion for PAD. (6).However, the emergence of diabetic nephropathy proved to be the pivotal clue. Diabetic nephropathy is independently associated with an increased risk of PAD in patients with T2DM, (3) and diabetic microvascular disease more broadly, including

neuropathy and retinopathy, predicts a substantially higher risk of PAD, foot ulceration, and amputation. (4, 5) This patient's new nephropathy diagnosis, combined with pain that was disproportionate to her imaging findings, was the trigger that prompted vascular referral.

> Clinicians managing diabetic patients with atypical leg pain should therefore treat a new or worsening microvascular complication as a sentinel marker warranting vascular risk stratification, even when the limb appears clinically warm and pulses are not formally documented as diminished.

This case also underscores the role that Chiropractors and other first-contact musculoskeletal providers can play as red-flag screeners for systemic and vascular disease. (14 - 18) Similar to previously reported cases in which chiropractic clinicians identified occult malignancy or nerve tumors masquerading as spinal pain, (19 - 32) the treating chiropractor's recognition that this patient's nocturnal pain pattern and new nephropathy diagnosis did not fit a purely musculoskeletal picture led directly to the correct diagnosis and timely revascularisation. (33, 34, 35) The dramatic and complete resolution of nocturnal rest pain within 48 hours of angioplasty, an interval far too short to reflect natural resolution of lumbar radiculopathy or knee derangement, provides strong clinical evidence that critical limb ischemia, rather than the incidental musculoskeletal findings, was the true driver of her symptoms. This temporal relationship, together with confirmatory angiographic findings, illustrates the value of a definitive vascular intervention as both treatment and diagnostic confirmation, and supports incorporating simple bedside tools such as the ankle-brachial index (7) into the assessment of diabetic patients presenting with atypical leg pain in musculoskeletal practice settings.

Conclusions

Critical limb ischemia can masquerade as lumbar radiculopathy and internal knee derangement in patients with type 2 diabetes, particularly when incidental degenerative imaging findings at the spine and knee provide a superficially plausible but ultimately incorrect explanation for severe, nocturnal leg pain.

A new diagnosis of diabetic nephropathy should prompt clinicians to consider peripheral artery disease as a sentinel vascular marker, even in the absence of classical claudication or overt ischemic signs.

First-contact musculoskeletal providers, including Chiropractors, are well positioned to recognise pain patterns disproportionate to imaging findings and to facilitate timely vascular referral, as illustrated by this patient's complete symptom resolution within 48 hours of successful revascularisation.

Ng Hannah Kwannoch
MChiro
Chiropractor
New York Medical Group
Kowloon, Hong Kong
hannahng@nymg.com.hk
https://nymg.com.hk/en/clinic-info/

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