



Case Report

Differentiation of vascular claudication due to bilateral common iliac artery stenosis versus neurogenic claudication with spinal stenosis

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ABSTRACT

Background: Differentiating between neurogenic and vascular claudication may be difficult. Vascular claudication due to aortic and iliac artery occlusions may present as low back, hip, and buttock pain while walking short distances. These findings are often very similar to those seen for neurogenic claudication attributed to lumbar stenosis.

Case Description: A 68-year-old female presented with low back, right hip, and groin pain while walking short distances. She had previously undergone lumbar and cardiac surgery. Now, with negative repeated lumbar studies, the CT angiogram (CTA) revealed a dense calcified plaque in the right common iliac artery resulting in 90% stenosis at its origin and <50% stenosis of the left common iliac artery. Once bilateral common iliac artery kissing stents were placed, the patient's symptoms resolved.

Conclusion: Spine surgeons should be aware that vascular and neurogenic claudication may mimic each other. Obtaining MR studies of the lumbar spine and EMG/NCV, along with the appropriate vascular studies (CTAs), help differentiate between the two, and result in the appropriate operative choices.

Keywords: Claudication, Electromyography/nerve conduction study, Hip, Neurogenic, Vascular

INTRODUCTION

While a spinal MRI/CT is the preferred modality for detecting lumbar stenosis, CT angiogram (CTA) and ankle-brachial index (ABI) studies are the gold standards for confirming aortoiliac occlusive disease (i.e., peripheral arterial disease).^[3,4]

Here, we report a 68-year-old female who presented with "claudication." When MR studies documented resolved lumbar stenosis, the abdominal/pelvic CTA documented significant bilateral iliac artery occlusive disease. Here, we presented a case of vascular claudication and reviewed the various factors that separate vascular and neurogenic claudication.

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CASE PRESENTATION

History and radiological imaging

A 68-year-old female (body mass index 34.75 kg/m²), with a history of hypertension, hyperlipidemia, diabetes mellitus, prior smoking, and a myocardial infarction (status post 1-vessel coronary artery bypass graft), presented with a 5-year history of low back pain/right hip/groin pain and numbness of the anterior aspect of the right thigh. When the lumbar myelogram/myelo-CT documented L4-5 stenosis with Grade I spondylolisthesis, the patient underwent a L4-5 lumbar decompression/fusion. When she failed to improve, she underwent a negative exploratory arthroscopy of the right hip. She underwent an abdominal aortoiliac CTA which documented marked aortoiliac calcification.

Now, the patient presented with a normal neurological examination, except for loss of pinprick sensation over the anterior thighs bilaterally. However, the vascular examination of the lower extremities revealed an absent right-sided posterior tibial pulse and loss of bilateral dorsalis pedis pulses.

On the CTA and abdominal subtraction arteriogram, there was diffuse atherosclerotic disease and moderate to high-grade stenosis involving the right common iliac artery near its origin [Figure 1]. A plaque in the right common iliac artery caused 90% stenosis at the origin, <50% stenosis of the left common iliac artery, but bilateral patency of both the external and internal iliac arteries. Doppler studies also confirmed significant ischemia of her right lower extremity.

Vascular surgery

When the abdominal aortoiliac CTA confirmed severe bilateral aortoiliac calcification, she underwent appropriate bilateral endovascular stenting procedures. An 8.0 mm × 57.0 mm Express™ LD stent (Boston Scientific; Marlborough, MA) was placed on the right, and an 8.0 mm × 37.0 mm Express™ LD stent was placed on the left. These kissing stents extended from the distal aorta into the common iliac arteries bilaterally and were deployed simultaneously by inflating the delivery balloon to 10 atmospheres. Following stent placement, the common iliac arteries were widely patent with no significant residual stenosis noted on the intraoperative arteriogram [Figure 2].

Postoperative follow-up

Postoperatively, the patient's right hip and buttock pain completely resolved within 1 week of stent placement. She was asymptomatic while walking a mile. The right lower extremity demonstrated mild arterial insufficiency at rest

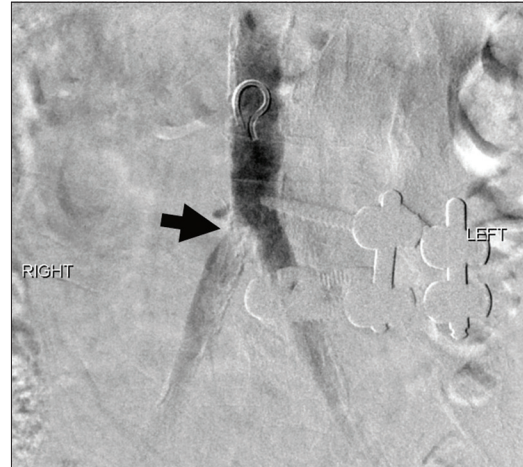


Figure 1: AP view of angiogram showing high-grade stenosis (arrowhead) at the origin of the right common iliac artery.



Figure 2: AP view of intraoperative angiogram with stent in place showing patency of the right common iliac artery.

with an ABI of 0.89 and digit pressure of 91 mm Hg 1 week postoperatively.

DISCUSSION

Differentiation of neurogenic claudication versus vascular claudication

Spine surgeons often neglect to perform a vascular examination (abdominal CTA), especially when the symptoms are not typical for spinal stenosis and spinal imaging studies fail to demonstrate truly “significant” findings for lumbar stenosis. The diagnosis of vascular claudication due to arterial atherosclerotic disease, particularly at the L2-3 level, and/or hip joint disease is presented in [Table 1].^[6,9] In DeWolfe *et al.*, 47 patients with hip claudication, the majority of patients were

Table 1: Differentiating features between vascular and neurogenic claudication and hip joint disease.

Disease	Pain location	Type of pain	Exercise-induced pain	Effect of rest	Effect of body position	Associated conditions
Arterial atherosclerotic disease	Buttock, hip, low back, thigh	Cramping, aching, fatigue, weakness, frank pain	Yes	Rapid relief with rest	None	Cardiovascular risk factors
Spinal stenosis	Buttock, hip, thigh	Cramping, aching, fatigue, weakness or tingling or clumsiness	Variable	Relieved by sitting or changing position	Relief by lumbar spine flexion (sitting, stopping, and leaning forward)	History of back problems
Hip osteoarthritis	Buttock, hip, thigh	Aching	Variable	No rapid relief (may be present at rest)	More comfortable with sitting	Related to activity level, weather changes
Bone metastasis	At the bone level	Aching	Variable	No rapid relief (may be present at rest)	Avoid direct pressure on bones	History of cancer
Venous congestion	Thigh, groin	Tightness, bursting	After walking	Subsides slowly	Relief by elevation	History of DVT at the inferior cava or iliac level; presence of varicose

Adapted from Mahe *et al.*, 2015,^[6] and White, 2007.^[9] DVT: Deep vein thrombosis.

referred for orthopedic evaluations.^[2] Notably, high arterial occlusion or stenosis involving one or both iliac arteries or the lower abdominal aorta was observed in all cases. In Johansson *et al.*, 8 patients with coexistent claudication and pseudoclaudication, a careful history and examination often differentiated between the two.^[5]

Endovascular procedures for vascular claudication

Aortoiliac CTA is now the procedure of choice to define aortoiliac disease that is now largely treated with endovascular procedures (e.g., percutaneous transluminal angioplasty with or without stent placement); they have high success rates without major complications.^[1,8] Primary stent implantation using the “kissing balloon technique” is safe and effective in treating lesions involving the distal aorta and/or origin of one or both iliac arteries.^[7]

CONCLUSION

It may be difficult for spine surgeons to differentiate between lumbar neurogenic claudication and peripheral vascular claudication. Whereas MR studies best document lumbar stenosis, abdominal/pelvic CTAs readily demonstrate aortoiliac disease.

Declaration of patient consent

Patient’s consent not required as patient’s identity is not disclosed or compromised.

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Nil.

Conflicts of Interest

There are no conflicts of interest.

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