May 6th, 12:00 AM

Bilateral Lower Extremity Ischemia Following Cardiac Catheterization

Moses Avedikian
Rowan University

Alan Lucerna
Rowan University

Trent Malcolm
Jefferson Health - New Jersey

Bilateral Lower Extremity Ischemia following Cardiac Catheterization

Moses Avedikian DO, Alan Lucerna DO, Trent Malcolm MD

Emergency Medicine Residency and Department of Emergency Medicine, Rowan University SOM

Abstract

Acute limb ischemia is a rare yet, limb threatening presentation where rapid diagnosis and intervention is warranted. Bilateral lower extremity ischemia can be a rare complication following procedures, such as a cardiac catheterization with access obtained in the groin. We describe a case of a 79 year old female who presented with bilateral lower extremity ischemia following a cardiac catheterization 2 weeks prior. The patient underwent CT angiography which demonstrated occlusion with no contrast present in the bilateral femoral arteries.

Introduction

Acute limb ischemia is a true surgical emergency which can lead to loss of limb if not acted upon in a timely fashion. Usually, acute lower limb ischemia results from an embolus from a more proximal source or from a prior atherosclerotic artery. The most common locations for emboli are at sites of arterial narrowing or bifurcations. CT angiography is the imaging modality of choice to evaluate the location of embolism and anatomy of the patient. Surgery and anticoagulation is the mainstay of therapy for reperfusion with potential of amputation if no improvement.

Case Report

A 79 year old Spanish-speaking female presented to the emergency department via EMS for a chief complaint of bilateral lower extremity numbness and severe pain to both legs. The patient states the symptoms started shortly after she woke up from a nap. Of note, the patient had a cardiac catheterization with access obtained from the right groin about 2 weeks prior. Ever since the cardiac catheterization, her Eliquis was held. The patient was recently discharged following an acute CVA and acute decompensated congestive heart failure. The patient has a history of atrial fibrillation and was on Plavix at the time of presentation.

On physical exam, the patient has cool extremities bilaterally and no pulses were felt bilaterally on the popliteal, dorsalis pedis, and posterior tibial arteries. On arrival to the emergency department, she was hypertnensive with a blood pressure of 195/91 mmg/Hg and tachycardic with a heart rate of 116 beats per minute. Otherwise, her other vital signs were within normal limits. Her body mass index was 28.2 kg/m2.

Pertinent lab findings included a potassium of 2.6, a glucose of 305, and a troponin of 32.0. Of note, her PT/INR and PTT were within normal limits.

Imaging was obtained immediately given the severity of the symptoms; a CTA chest, abdominal aorta and bilateral iliofemoral runoff with and without contrast was obtained. The findings included no aneurysm or dissection of the aortic arch through the abdominal aorta. However, there was no contrast present in the iliac arteries and arteries of the extremities. After discussing the physical examination findings with the radiologist, the findings were consistent with abrupt cutoff of the contrast into the left iliac artery and the right distal external and internal iliac arteries.

Surgery was called for acute intervention, heparin was initiated prior to surgical intervention, and the patient was admitted to the ICU. A bilateral iliofemoral thromboembolectomy and 4-compartment fasciotomy of the right lower extremity was performed. The patient was found to have thrombosis and occlusion of the right common femoral artery as well as scar tissue and hematoma at the region of the catheterization access site. The patient was discharged in stable condition 9 days following her ER visit.

Discussion

Acute limb ischemia is a limb threatening emergency, defined as decrease or complete cutoff of lower extremity perfusion. Limb ischemia is related to arterial occlusion, often related to comorbidities related to hypercoagulability in the patient. The incidence of acute lower extremity arterial occlusion resulting in ischemia is about 1.5 per 10,000 cases per year. The mainstay of therapy remains the same, surgical thrombolectomy followed with bypass grafting. Typically, the arterial occlusion is related to thrombosis of a previously diseased vessel; therefore atherosclerosis is the major risk factor. However, occlusion can also result from a stent, a graft, trauma, or due to an embolus from a more proximal source. The presentation of a patient with lower extremity ischemia in a vessel that is atherosclerotic is less severe compared to an embolus due to the collateral circulation that forms secondary to atherosclerosis.

The majority of arterial emboli that result in lower extremity ischemia start in the heart. The lower extremities are more commonly affected compared to the lower extremities due to emboli. The emboli typically lodge in regions where there is acute narrowing of an artery, either due to atherosclerosis or at a branch point. The most frequent areas of emboli resulting in ischemia are the common femoral artery, the common iliac artery, and the popliteal artery bifurcations.

Trauma can be another cause of acute lower extremity ischemia. Iatrogenic causes include occlusion at the site of arterial access when used for vascular or cardiac diagnoses or interventions. The incidence of arterial complications following cardiac catheterizations include 1.5 to 9 percent and range from hematomas, to AV fistulas, pseudoaneurysms and arterial occlusion.

The clinical presentation of acute limb ischemia is related to the time course of vessel occlusion. In patients with otherwise normal vasculature, collateral blood vessels cannot be recruited quickly enough when experiencing an acute arterial occlusion. Therefore, symptoms typically develop suddenly and can cause pain, pallor, poikilothermia, paralysis, paresthesias, and pulselessness. Immediate revascularization is the mainstay of therapy when immediately threatened limbs are salvageable.

For diagnosis, imaging is necessary in order to visualize the embolus and view the severity of the occlusion. For patients with immediately threatened limbs, urgent imaging via CT angiography is needed. Patients with immediately threatened extremity should undergo evaluation and treatment with the surgical team.

Conclusion

We describe a case where the patient had a recent cardiac catheterization which likely led to bilateral lower extremity ischemia secondary to trauma as well as an extensive amount of scar tissue. Surgical intervention and anticoagulation was started with bilateral iliofemoral thromboembolectomies. The patient was discharged to rehab in stable condition after a 9 day stay.

Resources

https://www.uptodate.com/contents/clinical-features-and-diagnosis-of-acute-lower-extremity-ischemia?search=arterial%20occlusion%20lower%20extremit&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1

https://www.uptodate.com/contents/endovascular-techniques-for-lower-extremity-revascularization?search=treatment%20of%20acute%20lower%20extremity%20ischemia&source=search_result&selectedTitle=7~150&usage_type=default&display_rank=7#H4007379708

https://www.uptodate.com/contents/classification-of-acute-and-chronic-lower-extremity-ischemia?search=bilateral%20lower%20extremity%20ischemia&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1

https://pubmed.ncbi.nlm.nih.gov/1735899/

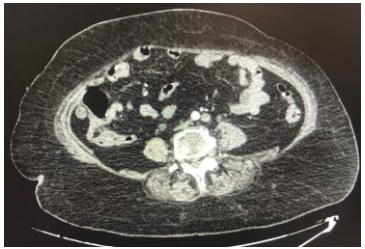

Figure 1: coronal view demonstrating lack of contrast into left iliac artery

Figure 2: transverse view of CTA chest, abdomen, pelvis with and without contrast demonstrating lack of contrast in left common iliac artery