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Acute Limb Ischemia Following Diagnostic Coronary Angiography: A Rare but Devastating Complication

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ABSTRACT

Cardiac catheterization is a widely used and generally safe diagnostic procedure; however, rare but severe vascular complications may still occur. We report the case of a 66-year-old woman with multiple cardiovascular risk factors and a history of rheumatoid arthritis who was admitted for acute decompensated global heart failure. Diagnostic coronary angiography via the right femoral approach revealed a significant mid-left anterior descending artery stenosis. A few hours after the procedure, the patient developed right lower limb pain and cyanosis of the great toe. Doppler ultrasound and CT angiography demonstrated multiple occlusive thrombi involving the superficial femoral, popliteal, and tibioperoneal arteries. Despite urgent Fogarty thrombectomy, revascularization was unsuccessful, leading to below-knee amputation. This case illustrates a rare but serious complication of femoral artery access during cardiac catheterization. Awareness, early detection, and prompt intervention are essential to prevent irreversible ischemic injury and improve patient outcomes.

KEYWORDS

cardiac catheterization, vascular complication, femoral thrombosis, acute limb ischemia, amputation

MAIN ARTICLE

INTRODUCTION:

Percutaneous cardiac catheterization for the diagnosis of cardiac disease has become a routine and generally safe procedure with widespread use. However, rare complications may still occur and sometimes require emergency surgical intervention [1]. Vascular complications related to cardiac catheterization and coronary intervention can be classified as minor or major [2].

Through this case, we aim to illustrate and discuss a rare but severe vascular complication following a diagnostic coronary angiography

CASE REPORT:

A 66-year-old woman with cardiovascular risk factors including hypertension, diabetes, and android obesity, and a medical history of rheumatoid arthritis with bone deformities and limited mobility with pulmonary involvement, was admitted for the management of acute decompensated global heart failure.

On physical examination, the patient presented with orthopnea, bilateral crackles reaching two-thirds of the lung fields, and lower limb edema extending halfway up the legs. She was started on diuretic therapy, with subsequent clinical improvement.

The ECG (figure1) showed a regular sinus rhythm with a normal cardiac axis and signs of left ventricular hypertrophy LVH.

Transthoracic echocardiography (TTE) revealed hypokinesia of the mid and basal segments of the inferoseptal and inferior walls, with preserved left ventricular systolic function (LVEF: 50%).

Diagnostic coronary angiography via the right femoral approach demonstrated a significant stenosis of the mid left anterior descending artery.

During the night following the procedure, the patient developed pain in the right lower limb and cyanosis of the great toe (figure2) . Doppler ultrasound of the lower limbs revealed a thrombus completely occluding the superficial femoral artery over a 3 cm length (figure3) , as well as a second occlusive thrombus involving the subarticular popliteal artery and tibioperoneal trunk, with no distal reflux.

The patient was transferred to the vascular surgery department, where a CT angiography confirmed the findings (figure 4). Fogarty thrombectomy was attempted but unsuccessful, and unfortunately, the patient ultimately required a right below-knee amputation.

DISCUSSION

Femoral artery complications after cardiac catheterization range from mild events requiring simple management to severe complications that necessitate invasive or surgical intervention [3].

Minor complications include local bleeding, ecchymosis, and small stable hematomas.

Major complications include pseudo aneurysm, arteriovenous (AV) fistula, large hematoma requiring transfusion, retroperitoneal hemorrhage, arterial dissection, embolism, thrombosis, infection, vessel rupture or perforation, and acute limb ischemia [2].

Risk factors for vascular complications of cardiac catheterization can be divided into patient-related and procedure-related factors.

Patient-related factors include female sex, low body weight, obesity, small body surface area, older age, peripheral vascular disease, renal impairment or elevated creatinine, and thrombocytopenia [4–6].

Procedure-related factors include prior catheterization at the same site, high doses and prolonged use of anticoagulants, thrombolytic therapy, use of GP IIb/IIIa inhibitors (especially abciximab), large-caliber arterial sheaths, concomitant venous access, prolonged sheath duration, long procedure time, repeat PCI, and high puncture site [4–7].

In the retrospective study by Michael A. Ricci et al. (1987), among all patients who underwent cardiac catheterization at the Medical Center Hospital of Vermont, 1% experienced vascular complications, including 9 cases of thromboembolic events [8].

In a 2016 Danish registry study by Ditte Dencker et al., major vascular access complications occurred in 0.5% of right-sided and 2.9% of left-sided procedures; two patients required limb amputation within 30 days [9].

Alternative access sites such as the radial, brachial, and axillary arteries have been explored. While brachial access carries a similar overall complication rate to femoral access, ischemic complications tend to be more frequent.

Radial access, on the other hand, is associated with lower complication rates, greater patient comfort, and reduced hospital costs [10].

CONCLUSION

Vascular access-site complications remain an important challenge for interventional cardiologists. Awareness, early recognition, and prompt management of these complications are essential to minimize morbidity and improve outcomes.

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FIGURES:

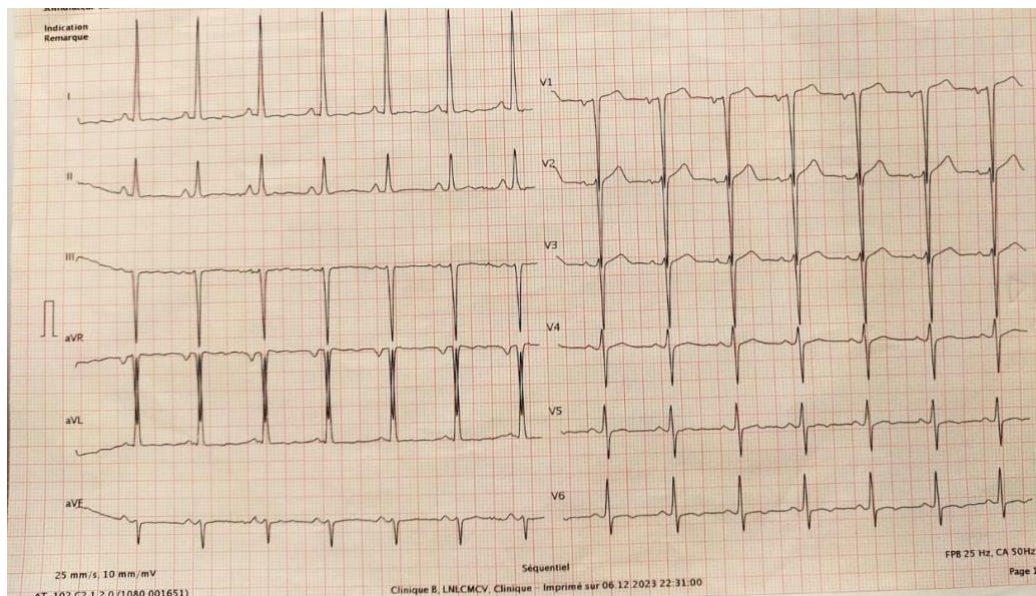


Figure 1 : ECG in regular sinus rhythm with normal axis and LVH



Figure 2 : Photograph of the lower limbs showing early ischemic changes of the affected limb , characterized by a cyanotic discoloration of the great toe.



Figure 3 : Doppler ultrasound of the lower limbs revealed a thrombus completely occluding the superficial femoral artery over a 3 cm length.

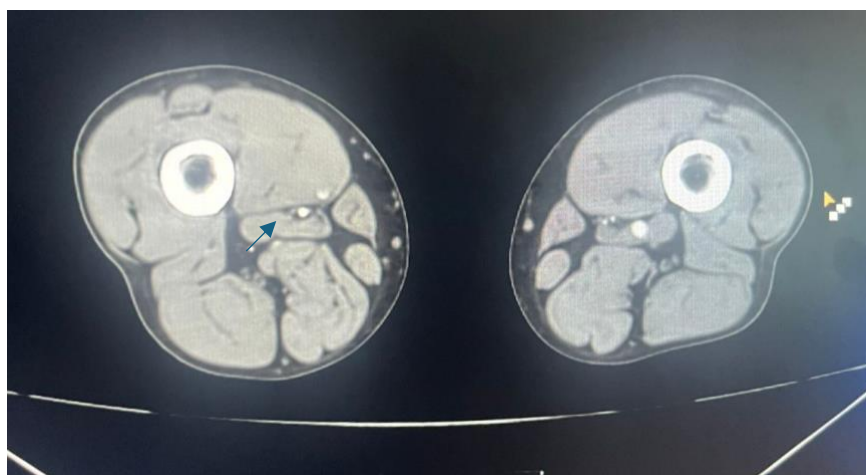


Figure 4 : CT angiography revealed a thrombus completely occluding the superficial femoral artery.

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