

## Case Report

### A Case Report of Atherosclerosis Disease with Clinical Polymorphism

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**Abstract:** We report the case of a 56 year-old female patient with multiple cardiac risk factors. At the first medical evaluation the patient presented suggestive symptoms for aortic dissection associated with claudication pain in the lower limbs. Physical examination revealed significant blood pressure asymmetry, systolic heart murmur on the left carotid and subclavian artery, as well as absent pulse in the left radial artery and bilateral femoral arteries. The first electrocardiogram and echocardiography revealed normal values and biologically a moderately high level of blood glucose and lipid profile. The thoraco-abdominal computed tomography angiography infirmed the first diagnostic hypothesis and revealed a quasi-complete left subclavian artery thrombosis, quasi-complete infrarenal abdominal aorta thrombosis extended to the common iliac arteries and also the tight inferior mesenteric artery stenosis. Doppler ultrasound of carotid artery and lower limb arterial spindles revealed diffuse atherosclerotic lesion with high significance in the left subclavian artery with the occurrence of the subclavian theft syndrom. The surgical resolution of the main lesion was required so the patient was redirected to the Cardiovascular Surgery Clinic where the aortobifemoral bypass was performed using a Dacron prosthetic graft. The presence of multivascular atherosclerotic disease in a female patient with atypical symptoms and fortuitous diagnosis of the main lesion indicated the need for urgent surgical treatment.

**Keywords:** Atherosclerotic lesion, Leriche syndrom, trombosis, artery stenosis, aortobifemoral bypass

#### Introduction

As a general definition atherosclerosis is a chronic inflammatory process that affects multiple vascular territories and is characterized by thickening of the intima and the middle layer of arteries with loss of vascular wall elasticity.

The main lesion is the atheroma plaque, consisting mainly of lipids, fibrous tissue and inflammatory cells. This lesion passes through different stages of development.

Complications of atherosclerosis result from fissure, erosion or rupture of the plaque and thrombus formation on its surface, which facilitates plaque growth and the onset of ischemia and necrosis. This event is the cause of clinical manifestations and explains the use of the term atherothrombotic disease.

Atherosclerosis represents a systemic pathology that affects arteries at different sites simultaneously with dissimilar degrees of progression and tend to develop in coronary arteries, carotid, vertebral and cerebral arteries, as well as in lower limb arteries (iliac, femoral arteries).

Leriche syndrome is a clinical triad that associates claudication, functional impotence and absent or decreased femoral pulses, an expression of aortoiliac occlusion.

#### Material and method

A 56 year-old female patient with multiple cardiac risk factors showed up at the cardiology department following high

intensity anterior thoracic pain with posterior radiation, accompanied by dyspnea on moderate exertion and vertigo, and intermittent claudication after less than 200 meters of walking.

Physical examination revealed significant asymmetry on arterial blood pressure measurement (right arm = 120/60 mmHg, left arm = 80 / 60mmHg), systolic murmur on the left carotid artery and left subclavian artery, as well as absence of left radial pulse and femoral pulses bilaterally.

Admission electrocardiogram revealed: regular sinus rhythm with 70 *beats per minute*; QRS axis +60 degrees, normal morphology.

Echocardiography examination revealed normal cardiac chamber sizes, concentric hypertrophy of left ventricle with diastolic dysfunction, posterior mitral ring calcification, aortic atheromatosis, normal contractility of left ventricle walls; ejection fraction 60%, without pericardial fluid, without intracavitary formations.

Biological examination: moderately elevated blood glucose (fasting glucose level between 136 and 163 mg%, glycosylated hemoglobin 6.3%) and lipid profile (total cholesterol 214 mg / dl, LDL cholesterol 144 mg / dl, triglyceride 198 mg / dl).

#### Result and discussion

These findings raised the suspicion of a thoracoabdominal dissection, but the thoracoabdominal computed tomography angiography affirmed the first diagnostic hypothesis and revealed the quasi-complete left subclavian artery thrombosis (fig.1) with a length of 26 mm, at 12 mm from the origin, with distal reperfusion; a quasi-complete infrarenal abdominal aorta thrombosis on the last 30 mm (fig.2), extended to the common iliac arteries (fig.3) 18 mm from the origin on the right side and 15 mm from the origin on the left side, with permeable internal and external iliac arteries; tight stenosis of the inferior mesenteric artery at the origin on a length of 5 mm.

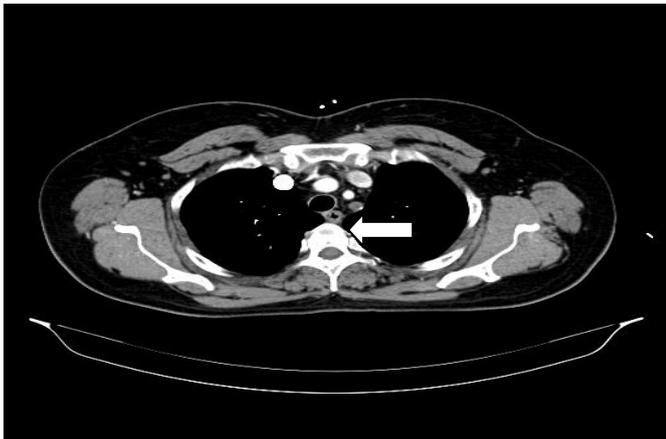


Fig. 1. Left subclavian artery thrombosis



Fig. 2. Pre-bifurcation abdominal aortic thrombosis

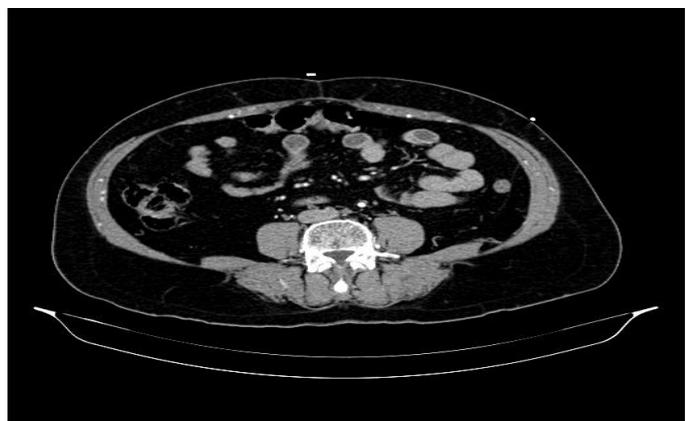


Fig. 3. Common iliac artery thrombosis

The diffuse plurivascular lesions revealed by the computed tomography exam (CT) led to further investigations of the vascular affection that brought additional data. Thus, the Doppler ultrasound of carotid artery showed an intima-media

thickness objectifies a 0,8 mm; calcified, irregular plaques at the right common carotid artery bifurcation and at the origin of right internal carotid artery with a 30% stenosis; calcified plaques at the left common carotid artery bifurcation and at the origin of the left internal carotid artery with a 40-50% stenosis; calcified plaques at the origin of the right subclavian artery with a 40% stenosis; a 90-95% stenosis at the origin of left subclavian artery with appearance of subclavian steal syndrome.

The arterial Doppler ultrasound of lower limbs revealed systolo-diastolic flow in the common femoral arteries; fibrous plaques of the left femoral and right popliteal arteries, with systolo-diastolic flow, slightly inhomogeneous fibrous plaques in the right and left, anterior and posterior tibial arteries with 40-50% stenosis and monophasic flow up to the distal third; terminal aortic thrombosis with refilling in the external iliac arteries showing systolic-diastolic flow.

Clinical improvement was not achieved during hospital stay under treatment with low molecular weight heparin (LMWH), peripheral vasodilators and statins, so the patient was referred to the Cardiovascular Surgery Clinic where the aortobifemoral bypass was performed using a Dacron prosthetic graft (fig.4,5). Intraoperative, it was noticed a compensatory development of multiple, large collateral arteries and veins that raised the surgical risk, but the intervention was realised without major incidents with favorable postoperative outcome.



Fig. 4. Intraoperative aspect-bifurcation of the abdominal aorta



Fig. 5. Intraoperative aspect - Dacron prosthetic graft

The patient's evolution one year after surgery was favorable with the resumption of moderate cotidian activity and compliance with diet.

## DISCUSSION

Leriche syndrome was first described by Quain in 1847 and later on by Leriche and Morel in 1940. [15] Leriche syndrome represents a category of atherosclerotic occlusive disease.

Incidence and aetiology are unknown, but other described aetiologies are exposure to radiation, luetic aortitis, congenital rubella infection, thrombangitis obliterans Winiwarter–Buerger and Takayasu arteritis.

Symptoms occur often in the 4th–5th decade of life [16] and are represented by intermittent claudication and arterial insufficiency of the extremities like muscle atrophy, pain, myalgias, trophic troubles paleness, neurologic symptoms, oedema, fatigability, an aggravation of hypertension or newly recognised hypertension, weight loss and erectile dysfunction [15, 17]. Typical risk factors of Leriche syndrome are hypertension, diabetes mellitus, smoking and hyperlipaemia.[17].

Physical examination typically shows differences between blood pressure of arms and legs. Femoral and calf arteries are decreased and the ankle–brachial indexes are reduced on both sides [17,18]. Diagnosys of Leriche syndrome is made by Computed Tomography scan(CT) or Magnetic Resonance Imaging exams(MRI).

Standard therapy is represented by surgical revascularisation [17]. Surgical standard management alternatives are bypass grafts and endarterectomy [18]. Aortofemoral bypass is the most common grafting technique.

## CONCLUSIONS

The primary illness in this case, Leriche syndrome is commonly diagnosed in patients with atherosclerotic involvement affecting multiple vascular territories. The development of occlusive lesions is a complex, long process and symptoms could be masked by the clinical expression of comorbidities until advanced stages. A late diagnosis in these cases significantly increases morbidity-mortality.

Treatment of Leriche syndrome is surgical and consists of aortoiliac endarterectomy and aortobifemoral bypass. Alternative procedures include percutaneous stent-supported angioplasty and axillofemoral bypass.

The case is meant to highlight the discrepancy between the diagnostic hypotheses raised by patient's polymorphism clinical picture and the severe arterial lesion, as assessed by the imaging examinations performed.

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