SCIENTIFIC LETTER

LERICHE SYNDROME: A RARE PRESENTATION OF ARTERIAL OCCLUSIVE DISEASE IN LATIN AMERICA

ABSTRACT

Leriche syndrome is a chronic arterial occlusive disease that primarily affects the lower abdominal aorta and iliac artery bifurcation. We present the case of a 53-year-old male with a classical Leriche triad of gluteal claudication, erectile dysfunction, and the absence of a femoral pulse. The patient had a history of hypertension and heavy smoking. Physical exam showed no ulcers. Distal capillary fill was greater than 10 seconds. Complementary exams reported normal findings. Leriche syndrome was suspected, and thoracoabdominal computed tomography angiography and lower limb computed tomography angiography were performed, revealing complete occlusion of the lower aortic bifurcation and iliac artery involvement. A retroperitoneal approach for bifemoral aortic bypass was performed. The patient had an optimal postoperative period and recovery.

Keywords: *Leriche syndrome, aortoiliac occlusive disease, vascular surgery.*

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INTRODUCTION

A chronic arterial occlusive disease affecting the infrarenal aorta, iliac arteries, and femoropopliteal vessels is called Leriche syndrome (LS). Classical symptoms known as the Leriche triad include the absence of femoral pulses, intermittent claudication, and impotence[1].

The exact incidence and prevalence of LS remain unknown. However, incidence increases in the presence of various risk factors, including male sex, advanced age (≥50 years), atherosclerosis, dyslipidemia, smoking, and diabetes[1,2]. Only 10% of LS patients experience symptoms, indicating advanced disease and resulting in limitations for treatment selection[3]. Therefore, early diagnosis is crucial to enhance the patient's quality of life and reduce the risk of unfavorable outcomes, such as acute myocardial infarction, stroke, and even death[1,2].

This case report series aims to showcase the significance of an accurate diagnosis and optimal treatment approach in improving outcomes on LS within the Latin-American population.

CASE REPORT

A male patient, 53 years old, presented to the emergency department of a local hospital with a 7-day history of gluteal claudication, the absence of femoral pulses, and erectile dysfunction. Over the past week, the claudication had progressed to a point where it was persistent even during rest periods, prompting his visit to the emergency department. His medical history revealed a background of hypertension and heavy smoking, with a calculated pack-year index of 20. Initial vital signs indicated grade 2 hypertension (140/82 mmHg). On physical examination, femoral pulses were notably absent, and distal capillary refill time was measured at 10 seconds. The patient exhibited gluteal and lower limb claudication, manifesting even after covering a distance of 50 meters (164 ft), and this was concomitant with erectile dysfunction. Notably, there were no ulcers on his extremities or signs of necrosis at the level of his fingers.

Laboratory tests were conducted, revealing the following results: hemoglobin level of 14.8 g/dL, platelet count of 253,000/mm^3, serum creatinine concentration of 1.04 mg/dL, leukocyte count of 11,500/mm^3, and an international normalized ratio (INR) of 1.01. An electrocardiogram and chest X-ray were also performed, which yielded normal findings.

Given the presence of the classic clinical triad of LS in a patient with a history of smoking, we proceeded to perform thoracoabdominal computed tomography angiography (TA-CTA) and lower limb computed tomography angiography (LL-CTA). The TA-CTA results revealed chronic complete occlusion (CCO) of the aortic bifurcation with the involvement of the common iliac arteries (*Image 1*). Furthermore, the LL-CTA indicated the absence of macroscopic vascular lesions (*Image 2*). Based on these findings, we established a diagnosis of aortoiliac occlusive disease classified as Trans-Atlantic Inter-Society Consensus II (TASC II) type D, total occlusion with bilateral iliac artery involvement.

Considering the patient's age and the lower perioperative mortality risk associated with the procedure, we opted for a retroperitoneal bifemoral aortic bypass (BFAB) as the optimal treatment choice in this case rather than covered endovascular reconstruction of the aortic bifurcation (CERAB) (*Image 3*). No reoperation was necessary, and no surgical site infection (SSI) signs were detected. The patient remained in the Intensive Care Unit for one day for postoperative monitoring before being hospitalized for three days. The patient continued to abstain from smoking entirely and maintained the COMPASS-VOYAGER pharmacologic regimen, which included daily administration of Aspirin 100 mg, Atorvastatin 40 mg, and Rivaroxaban 2.5 mg every 12 hours indefinitely. Following the surgery, the patient experienced a 100% improvement in claudication symptoms, with femoral and pedal pulses reappearance.

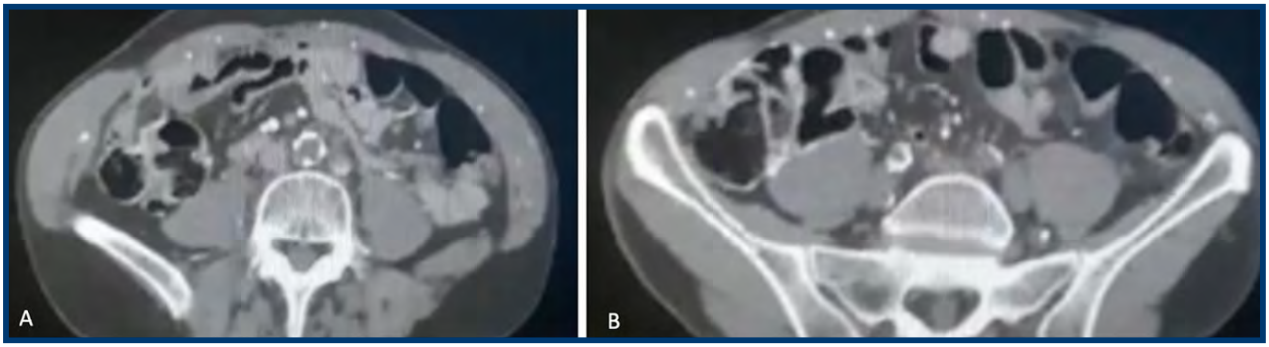

IMAGE 1. Thoracoabdominal-computed tomography angiography. Evidence of chronic complete occlusion of (A) the infrarenal aorta and aortic bifurcation and (B) involvement of the common iliac arteries.

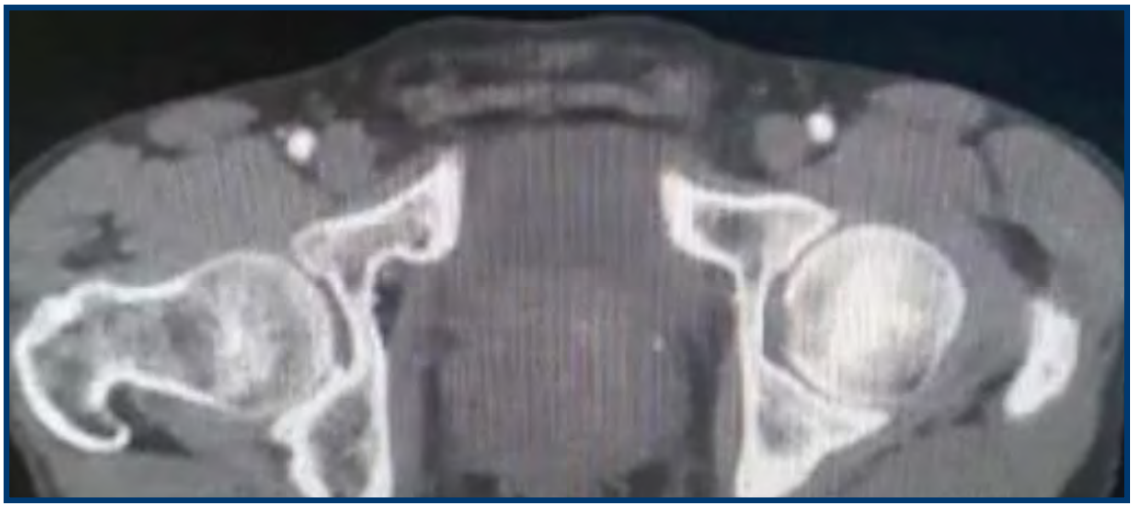

IMAGE 2. Lower limb-computed tomography angiography. No macroscopic vascular lesions were detected.

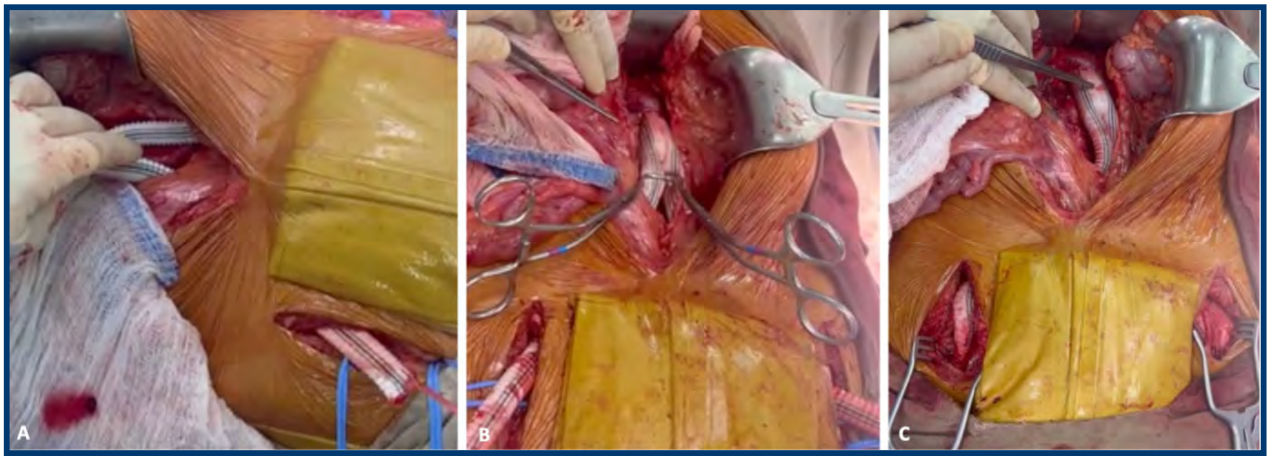

IMAGE 3. Retroperitoneal bifemoral aortic bypass procedure. **A.** Creation of retroperitoneal iliac tunnel and passage of the aortobifemoral graft. **B.** Proximal aortic anastomosis. **C.** Final aortobifemoral bypass with bifurcated Dacron graft.

DISCUSSION

LS predominantly manifests in male patients between their third and sixth decades. The classical triad typifies it. Nevertheless, there exist cases in which erectile dysfunction and claudication may be attenuated due to the presence of collateral circulation. Hence, the absence of femoral pulses is the primary symptom to investigate in patients suspected of having LS[4].

A retrospective study revealed that 82.8% of patients with LS had a recent history of tobacco use, 63.2% presented with dyslipidemia, and 55.2% had arterial hypertension5. These variables are significant in assessing our patients, as poorly controlled hypertension increases the risk for peripheral artery disease (OR: 1.75; 95%CI: 0.97-3.13), smoking (OR: 4.46; 95%CI: 2.25-8.84) and hypercholesterolemia (OR: 1.68; 95%CI: 1.09-2.57)[6]. Chronic endothelial damage and inflammation of the aortoiliac segments can result in significant stenosis, with more than 50% narrowing of the total lumen in these segments[2].

Smoking holds particular importance within the Latin-American context, as an estimated smoking initiation age of 11.9 years is evident, with a prevalence of consumption ranging from 7.4% to 34.1% among 663,703 school students[7]. Therefore, it is imperative to strengthen public health policies aimed at reducing morbidity and mortality associated with tobacco consumption, particularly when it begins at a young age.

A comprehensive clinical history and physical examination are essential to suspect LS diagnosis. However, radiological findings obtained through computed tomography angiography (CTA) are instrumental in achieving a more precise characterization of the luminal defect, facilitating the diagnosis and classification of LS. CTA demonstrates sensitivity and specificity exceeding 95% in detecting stenosis or occlusion within the aortoiliac and femoropopliteal segments, although its performance is comparatively lower in the infrapatellar segments. The inclusion of an electrocardiogram in patients

suspected of having LS is crucial since 10-71% of such patients may concurrently present with coronary artery disease[3,4].

Considering the management of LS, a comparative analysis was undertaken to assess the efficacy of open surgical repair versus endovascular repair using self-expanding covered stents for treating complex TASC type C and D aortoiliac lesions in a cohort of 114 patients. Among these patients, 58 underwent CERAB, exhibiting shorter hospital stays (2.6 days vs. 8.6 days) and reduced ICU stays (0.1 days vs. 0.9 days) compared to the 56 patients who underwent BFAB[8]. However, both groups demonstrated similar primary patency rates (87.3% and 81.4%, respectively) and comparable limb salvage rates (98.9% and 98.4%, respectively). This trend persisted even among the subset of younger patients, those under 60 years old[8].

In a retrospective study conducted by Fujimura et al., a comparison of clinical outcomes between BFAB and CERAB was performed in 436 patients with chronic total occlusion of the infrarenal abdominal aorta. The study revealed that CERAB also substantially reduced hospital length of stay by approximately 10 days. However, procedural success rates were consistently high and comparable, with CERAB demonstrating a success rate of 98.9% compared to 96.6% for BFAB. Similarly, the incidence of complications was 9.1% for CERAB and 12.3% for BFAB. In comparison, the respective mortality rates were 2.3% for CERAB and 3.8% for BFAB, with no statistically significant differences observed between the two treatment groups[9].

A single-center retrospective study by Smith et al. analyzed the treatment outcomes of patients with TASC II D lesions who underwent either BFAB or CERAB. The primary surgical indications were claudication in 55.6% of patients, rest pain in 28.3%, and tissue loss in 16.2%. The study demonstrated that patients treated with CERAB experienced shorter hospital stays and lower surgical site infection rates compared to those treated with BFAB (8.0% vs 37.5%, respectively). However, patients treated with BFAB showed significantly higher five-year primary patency rates compared to CERAB (88.1% vs. 50.8%, respectively) and superior five-year survival rates (100% vs. 76.5%, respectively)[10].

It is important to emphasize that patients undergoing surgery exhibit rest-induced disabling claudication that remains unresponsive to medical interventions or present with limb-threatening ischemia. Preoperative smoking cessation is mandatory to mitigate recurrence rates and the need for re-interventions. The CERAB approach was designed for patients TASC II C and D. This technique is advantageous in minimizing perioperative mortality for patients over 65. However, its 10-year patency is not well established. Thus, younger patients suitable for surgery are better candidates for BFAP intervention for LS treatment.

Our study has some limitations, as it is a monocentric, observational, and descriptive study of a unique case presented. However, reporting cases of interest is essential to take a first step towards creating a multicentric database for future studies in Colombia and Latin America, leading to a better approach to the prevention, diagnosis, and treatment of this condition within our population.

CONCLUSION

As an unusual presentation of arterial occlusive disease, LS is a critical clinical condition where the clinical approach is vital for optimal events. For patients with LS with non-advanced age and favorable conditions for surgery, open bifemoral aortic bypass is a better approach for definitive cure as it shows better long-term patency compared to endovascular treatment.

Declarations

The authors declare no conflict of interest.

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