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Case Report

Leriche syndrome: Clinical and diagnostic approach of a rare infrarenal aortoiliac occlusive disease[☆]

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ABSTRACT

Leriche syndrome is an aortoiliac occlusive arterial disease comprising decreased peripheral pulses, claudication, and erectile dysfunction. We present a case of a 60-year-old male with abdominal pain and hematochezia who was diagnosed with hemorrhoids. The patient also had associated leg cramps on both sides and lower limb weakness. Further evaluation of the patient with imaging revealed occlusion of the distal descending abdominal aorta below the level of renal arteries and the iliac arteries. An incidental finding of Leriche syndrome was evident. This case report contributes to the current literature when any patient with abdominal pain and bilateral lower limb weakness, Leriche syndrome should be considered to avoid complications as it has high morbidity and mortality.

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Introduction

Leriche syndrome also known as aortoiliac occlusive disease, which is distinguished by chronic obstruction of the abdominal aorta and iliac arteries [1]. In 1814, it was reported by Robert Graham [2]. A French surgeon “Rene Leriche” was the first who operate on this disease, hence named after him [1]. Men over the age of 50 years are commonly affected. The risk factors include diabetes, hypertension, smoking, and

hyperlipidemia [3]. Claudication of the lower limbs, absent or decreased peripheral pulses, and erectile dysfunction in males are the major clinical findings of this disease [1,4]. Abdominal ultrasound with color Doppler and computed tomography (CT) angiography are the diagnostic tools that help in diagnosing the disease. Surgery is the mainstay treatment in these patients. Alternative procedures include angioplasty with stenting and axillo-femoral bypass [5]. The mortality and morbidity rates are 4.5%-5.0% and 18%-20% respectively [4,6].

[☆] Competing Interests: None to declare.

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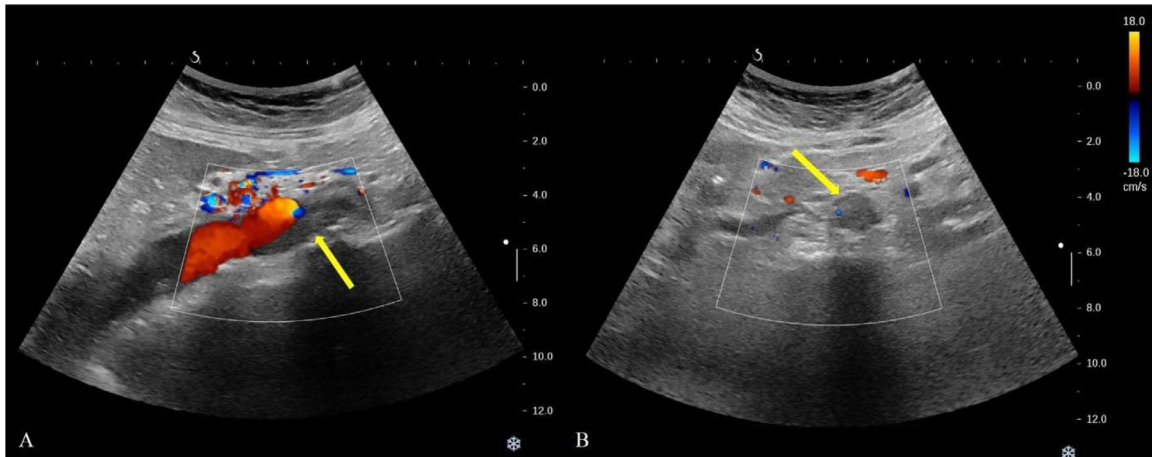


Fig. 1 – Leriche syndrome: color Doppler showing hypoechoic plaque within the lumen of the distal abdominal aorta with no color flow (yellow arrows).

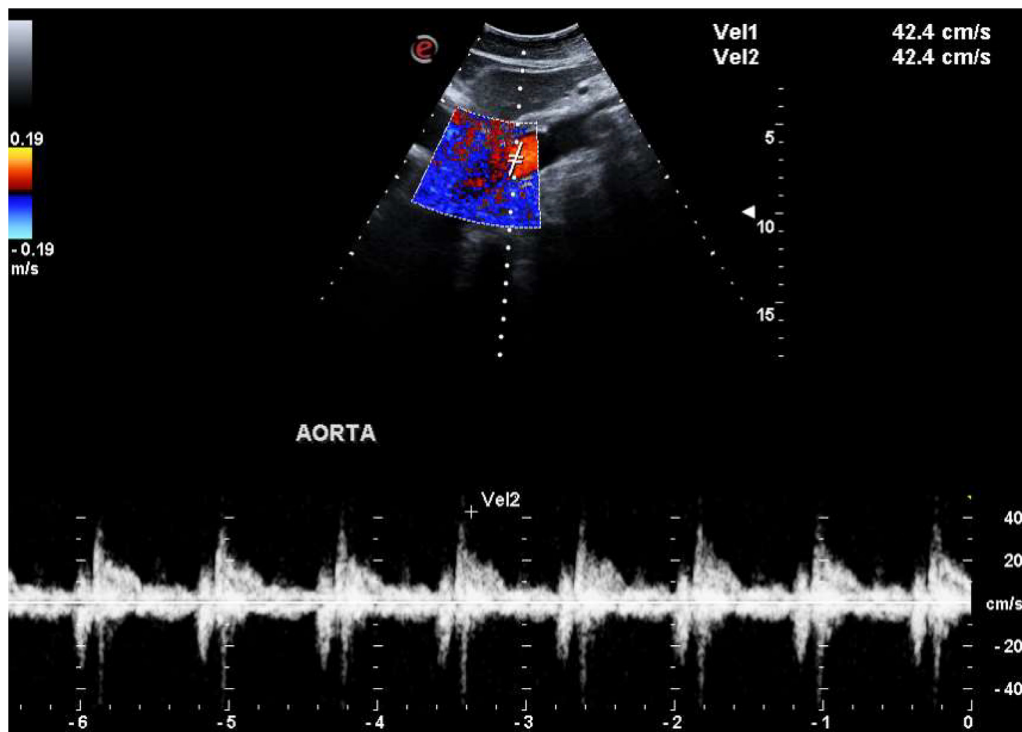


Fig. 2 – Leriche syndrome: color and pulse wave Doppler ultrasound demonstrates turbulent flow and elevated peak systolic velocity within the narrowed segment of abdominal aorta.

Case presentation

A 60-year-old male presented to our institute with abdominal pain and hematochezia for 2 months. The pain was dull aching, and nonradiating which gradually aggravated. The patient also complained of leg cramps and lower limb weakness for 1 month. He also gave the history of smoking for the last 30 years. He had no medical history. The patient did not give

a history of impotence. His vitals were stable. Laboratory investigations were within normal limits. The patient was diagnosed with hemorrhoids for which he underwent surgery. During his hospital stay, the patient's leg cramps and lower limb weakness aggravated. Physical examination revealed decreased pulse in the popliteal-dorsalis pedis and posterior tibial arteries in bilateral lower limbs. Sensory and motor exams were normal. Further evaluation of the patient with Doppler ultrasound and CT angiography was executed. Color Doppler

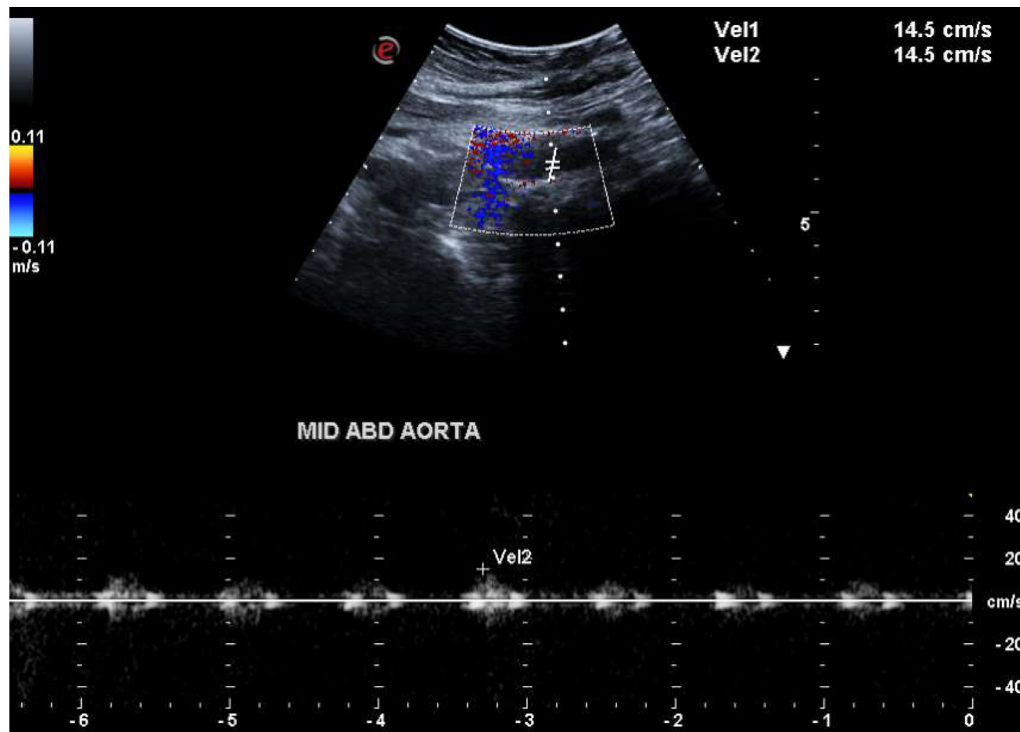


Fig. 3 – Leriche syndrome: color and pulse wave Doppler ultrasound of abdominal aorta showing “tardus parvus” waveform below the level of renal arteries. The main renal arteries were patent with normal flow velocities.

examination revealed plaque with minimal blood flow to the descending abdominal aorta and iliac branches (Fig. 1). The obstruction was extended to the external iliac arteries bilaterally. Doppler ultrasound demonstrated turbulent flow with elevated peak systolic velocity within the narrowed segment of abdominal aorta and “tardus parvus” waveform below the level of renal arteries (Figs. 2 and 3). Decreased systolic velocities and increased acceleration time were also noted in the bilateral external iliac arteries (Fig. 4). Abdominal CT angiography demonstrated plaque within the lumen and decreased contrast filling in the distal part of the abdominal aorta below the renal arteries, right and left iliac arteries (Figs. 5–10). He underwent an embolectomy. There was no complications from the surgery.

Discussion

Leriche syndrome is a rare occlusive disease in comparison to infrainguinal arterial occlusive disease [7]. The disease involves the aortoiliac level and the infrainguinal arteries are usually spared [8]. Firstly, the disease affects the distal aorta or common iliac arteries which further progresses to involve both proximally and distally over time. Leriche syndrome can be seen in four variations: a) the primary iliac stenosis, b) the aortic bifurcation stenosis involving only the aortic termination and the origin of the primary iliac, c) the abdominal aorta and iliac stenosis (as in our case), d) complete stenosis of the infrarenal aorta [8].

It can be asymptomatic at times, however, it can lead to catastrophic consequences and mortality when undiagnosed or untreated [9]. In symptomatic patients, pain, paralysis, paresthesia, pallor, weakness, or impotence are frequently seen. Buttocks and hip pain depend on the vessels involvement and formation of collaterals [10].

Arterial ultrasound Doppler study is very useful in assessing the descending abdominal aorta and its branches. It is an easy and fast technique with no radiation risk. It has been used to assess the blood flow in distal arteries postembolectomy [11]. On arterial Doppler, tardus parvus waveform in the common femoral or external iliac arteries is suggestive of significant proximal obstruction [12]. CT angiography of the abdomen and the lower extremities is the modality of choice for assessing the arteries. It is useful in the management and planning of surgery [10,13].

Leriche syndrome can also present with multisystem infarction [9].

Ali et al., incidentally diagnosed Leriche syndrome in a traumatic patient and emphasized the importance of frequent Doppler measurements of the lower limbs during acute hemodynamic instability [11].

Leriche syndrome is associated with other diseases. It was detected in patients with pancreatic and colon cancer who presented with claudication of the legs and hypoesthesia [13,14]. Colorectal cancer was seen in 8.3% of patients with Leriche syndrome [15]. In our case, Leriche syndrome was detected incidentally when the patient was primarily evaluated for hemorrhoids.

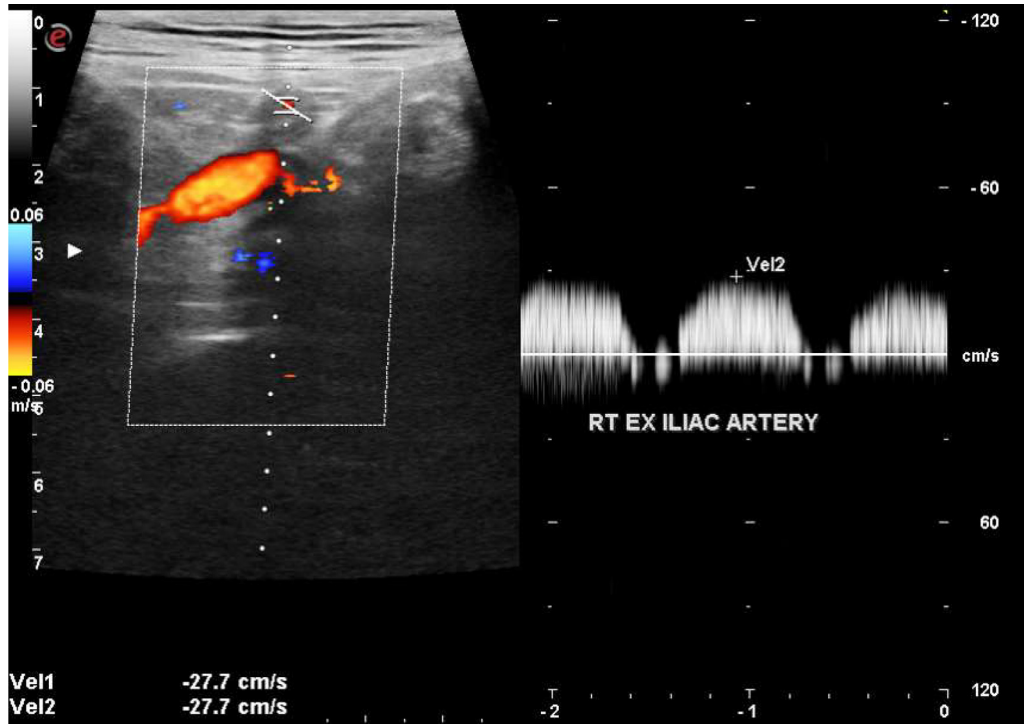


Fig. 4 – Leriche syndrome: Doppler waveform of right external iliac artery demonstrate decreased systolic velocities and increased acceleration time indicating “tardus parvus” waveform suggesting significant proximal obstruction.

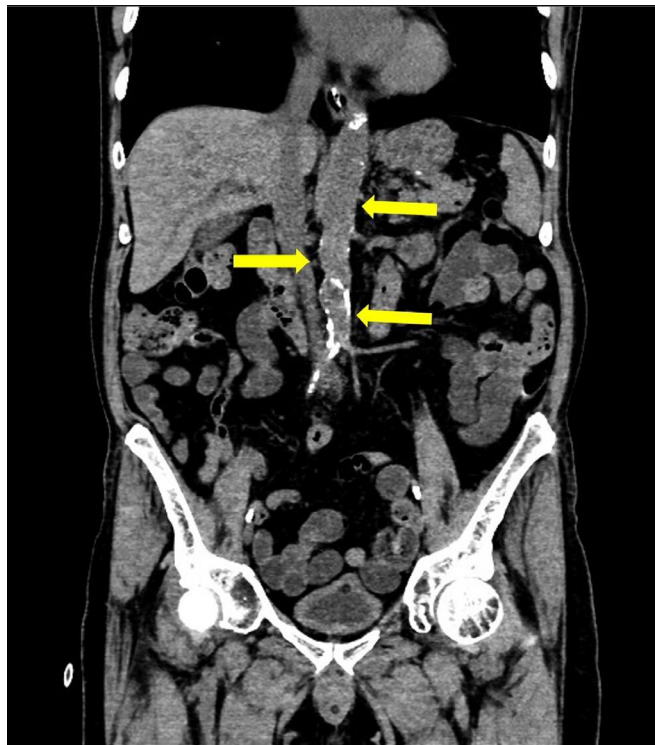


Fig. 5 – Leriche syndrome: noncontrast CT coronal showing plaque within the distal abdominal aorta and its branches (yellow arrows).

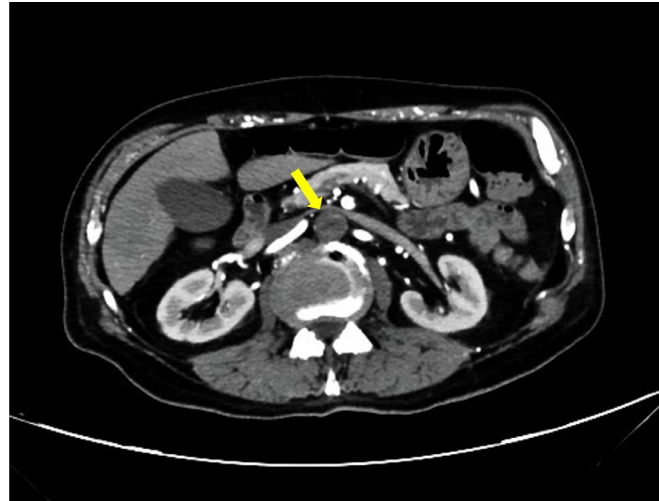


Fig. 6 – Leriche syndrome: Contrast enhanced CT showing no contrast opacification of distal abdominal aorta below renal arteries (yellow arrow).

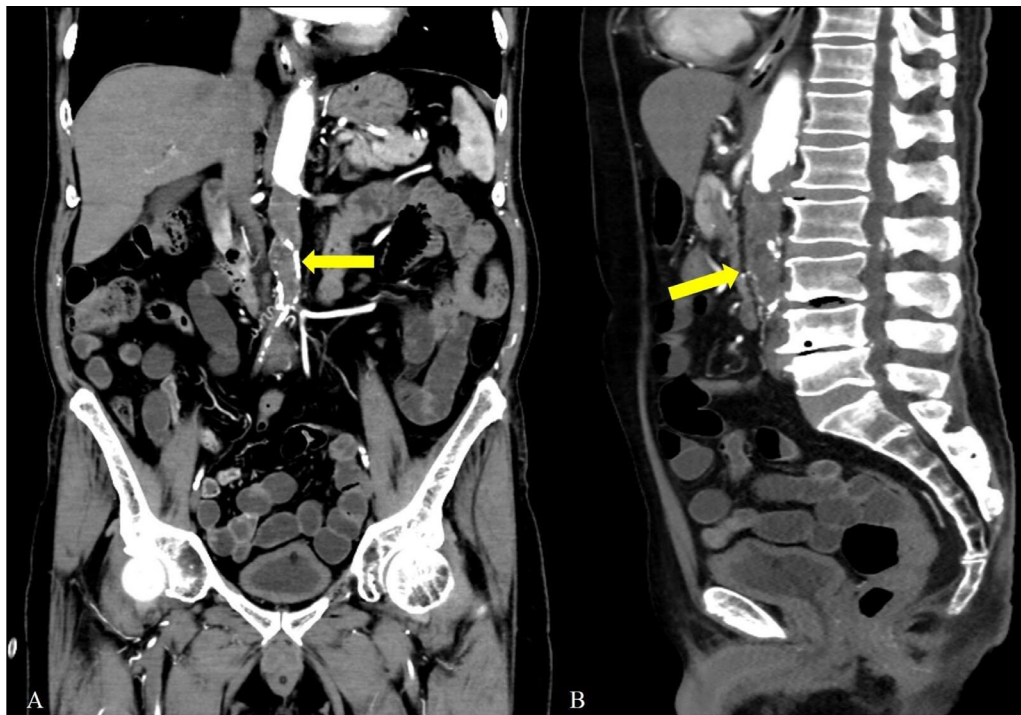


Figure 7 – Leriche syndrome: Contrast enhanced CT arterial phase (A) coronal (B) sagittal showing non contrast opacification of the distal abdominal aorta below the renal arteries (yellow arrows).

While Leriche syndrome is typically a chronic atherosclerotic disease, however, acute cases have also been reported [16,17]. Concomitant acute pulmonary embolism and acute myocardial infarction associated were evident in a patient with Leriche syndrome [18].

It must be considered in the differential diagnosis of many vascular conditions, like arterial dissection in the iliac arteries which can imitate the symptoms of Leriche syndrome [19]. The presence of clinical findings in conjunction with ultrasound and CT angiography would be helpful in distinguishing the underlying pathology.

The prognosis of Leriche syndrome is unfavorable if untreated. However, the development of collaterals may compensate in some cases with slow progression or onset [20], which was also seen in our case. The systemic and visceral vessels form effective collaterals. The patency of the external iliac arteries is reconstituted by the most common systemic pathway which collects flow from iliolumbar, lumbar, sacral, and inferior epigastric arteries to supply the ascending branches of the deep circumflex iliac arteries. The visceral pathway helps in shifting the flow from the distal superior mesenteric artery to the branches of the inferior mesen-

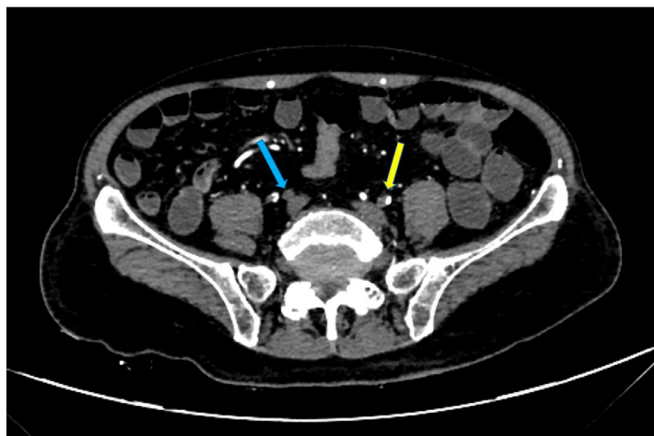


Figure 8 – Leriche syndrome: Contrast enhanced CT arterial phase showing non contrast opacification of right common iliac artery (blue arrow) and partial contrast opacification of left common iliac artery (yellow arrow).

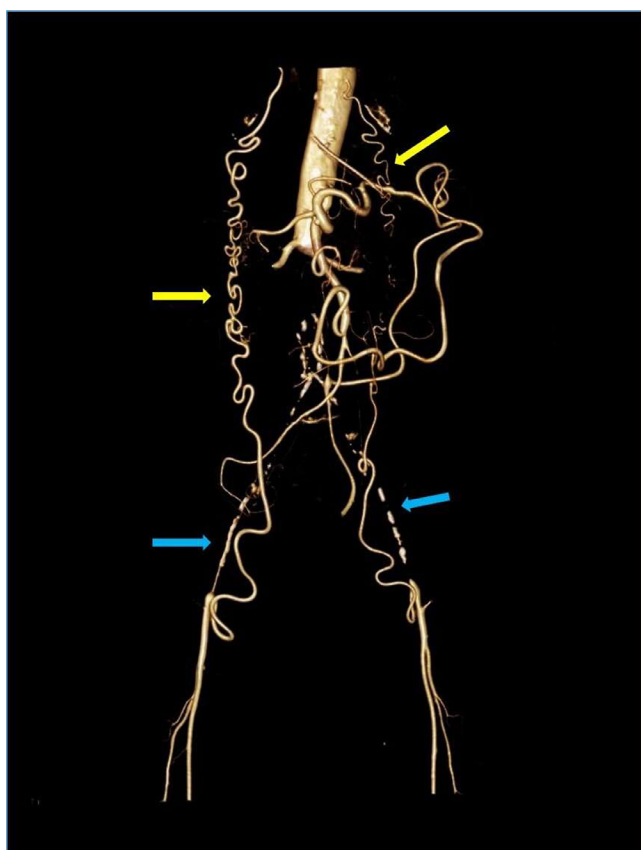


Figure 9 – Leriche syndrome: The three dimensional CT rendering technique (VRT) of the abdomen with aortic angiography and lower extremity showing atherocalcific changes of bilateral external iliac arteries (blue arrows) and non-visualization of infrarenal abdominal aorta with establishment of collaterals (yellow arrows).

teric artery. Sometimes the internal iliac artery is supplied by the development of collaterals from the superior mesenteric artery which may also anastomose with the rectal plexus [21].



Figure 10 – Leriche syndrome: contrast enhanced CT arterial phase showing normal contrast opacification of superior mesenteric artery without any plaque or thrombosis.

The potential complications include limb ischemia, myocardial infarction, gangrene, and even death [22-25]

Multidisciplinary approach has been recommended to enhance patient satisfaction and well-being [26].

Conclusion

- Leriche syndrome is a rare occlusive disease in comparison to infrainguinal arterial occlusive disease.

- Ultrasound and CT angiography are important diagnostic tools for detecting the stenosis.
- Various vascular conditions can imitate Leriche syndrome and must be considered in the differential diagnosis. Surgery is the mainstay treatment for this disease.

Patient consent

Written informed consent for the publication of this case report was obtained from the patient.

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