Back Pain, Lower Limb Immobility and Ulcers as Indicators of Abdominal Aorta Occlusion below the Origin of Renal Arteries, Leriche Syndrome

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Abstract
A 33-year-old female, presented with fever, lower limb ulcers and severe backache. The present history evolved four weeks after the complaints of claudication of buttocks, thighs and calves. Lower limb arterial pulsations were not detectable. Colour Doppler and Computed Tomograph (CT) Angiography revealed blockage of abdominal aorta below the origin of renal arteries. The cause of the fever, lower limb ulcers and cruciate backache could be related to this occlusion. This obstruction which was first described by Leriche and is not known to endow with such perplex symptomatology and that too, to a dermatologist with acute febrile illness, severe backache and lower limb ulcers.

Introduction
Thrombosis of the aorta can occur secondary to atherosclerosis, aneurysms, trauma, inflammation and hypercoagulable states. The heart is the single most important source of peripheral thrombo-embolism. Various sites of occlusion seen are, the descending aorta, the arch of aorta and the peripheral arteries. Complete occlusion of the lower abdominal aorta was first described by Leriche. The patients of lower abdominal aorta blockage who are generally males, present as abdominal pain, muscle pain involving calf, thigh and buttocks, peripheral gangrene, hypertension and impotence unlike the present case.

Case Report
A 33-year-old female presented with intermittent high grade fever, multiple large ulcers over both the thighs and severe back pain for one month. Few days prior to this she developed night sweats, loss of weight, appetite and amenorrhoea. The back pain gradually increased and radiated to both the lower limbs, but more to the left side. The back pain was so severe, that she was unable to sit, and to avoid pain she preferred to lie with her left lower limb externally rotated at hip, and flexed at hip and knee joints. She could keep her right lower limb straight and move it freely. The extension of the left hip and knee was painful and not possible. She gave history of claudication of the buttocks, thighs and calf muscles 4 weeks prior to the onset of fever and backache. The claudication distance progressed gradually and decreased from 8-10 steps initially to pain at rest and back pain. Later, the pain became constant, agonising and interfered with her sleep. This was followed by fever and ulceration over her left buttock and lower limb and then the right lower limb after an initial period of deep erythema. The pain in the ulcers was continuous, burning and constricting type. There was no history of abdominal pain. Non steroid anti-inflammatory drugs and non opiate drugs had little effect on pain.

Lumbar lordosis, tenderness in the dorso-lumbar region (T11-L3) and spasm of the psoas was present along with global atrophy of lower limb muscles. No family member suffered from tuberculosis. She had been a smoker of cigarettes for 15 years. She was pale. None of her lower limb pulses (femoral region and distally) could be felt while all her upper limb pulses and carotids were palpable. The pulse was 100/min, regular, low volume and its walls could not be felt. No bruit could be heard. Her blood pressure was 138/96 mm Hg in both upper limbs. There was no significant
lymphadenopathy or hepato-splenomegaly.

Cutaneous examination at the time of presentation revealed multiple, tender, well defined areas of dusky discolouration of different sizes, and was surrounded with indurated erythematous violaceous zone (Figure 1). Some of these areas had coalesced and formed large plaques and the centre denuded to form ulcers. These ulcers had erythematous shiny floor. These were present over left inguinal region, thigh, popliteal fossa, upper leg and toes (inset, Figure 1). The right lower limbs also had few areas with similar changes. During the hospital stay she developed painful similar looking areas with central darkening over both the lower limbs. Later the centre became parchment like. Skin biopsy from the ulcer edge on three occasions demonstrated fibrino-suppurative exudates in the dermis. Both the lower limbs were pale and cold and the muscle mass of the thighs and calves significantly reduced.

Her haemogram except ESR (50 mm 1st hr) was normal. The blood glucose was 200 mg/dl and 323 mg/dl fasting and post prandial, respectively. Her serum lipid and hormonal profile were normal. Mantoux was 20 mm x 20 mm. Her blood VDRL, ELISA for HIV, HBsAg, Anti HCV, ANA, n-DNA, Rheumatoid factor, pANCA and cANCA were negative. C reactive protein, Serum Immunoglobulins, Serum Complement (C3 and C4) were normal. Coagulation profile and blood homocysteine levels were normal. Urine for pregnancy test was negative. Her endometrial biopsy showed atrophic endometrium. No AFB was seen. *Staph. aureus* was isolated from the ulcers and managed according to the sensitivity report. Blood culture was sterile.

X-ray of the chest, thoraco-lumbar, lumbo-sacral and sacro-iliaic spine, MRI thoraco-lumbar and sacral region and Ultrasonography abdomen were normal. ECG and echocardiography were normal. Colour Doppler of the abdomen and lower limbs revealed narrowing and blockage of the abdominal aorta below the origin of the renal arteries with multiple collateral formations and narrowing of caliber with parvus tardus pattern in lower limb arteries of both the sides. Uterine artery flow was monophasic with low velocity. Upper limb Colour Doppler was normal. Computed Tomography (CT) angiography showed normal abdominal aorta upto the origin of the coeliac trunk. Mild thickening of the wall was seen at the origin of coeliac trunk and superior mesenteric artery. There was gradual narrowing of lumen of the abdominal aorta due to circumferential thickening beyond the origin of the coeliac trunk upto 1.2 cm distal to the origin of the right renal artery from where there was total occlusion of the abdominal aorta in the form of hypo-dense filling defect in it (single arrow, Figure 2). Both renal arteries were normal. Origin of the inferior mesenteric artery was occluded but was reconstituted distally by the collaterals from superior mesenteric artery as seen in classical Leriche Syndrome, the arc of Riolan (double arrow, Figure 2). There was complete occlusion of both the common iliac arteries. The external and internal iliac arteries, ovarian and uterine arteries were narrow in calibre and re-formed on both the sides by multiple collaterals from the superior epigastric artery, the internal mammary artery and the subcostal arteries via the superficial circumflex iliac and the inferior epigastric artery. Their other smaller branches were not identifiable. All the lower limb arteries were reduced in calibre. Coronary angiogram performed from the left radial artery (as there was complete occlusion of the abdominal aorta), revealed stenosis of the mid right coronary artery. The left coronary artery could not be hooked during the procedure. She was then further managed at the cardiothoracic centre and was being prepared for aorto bi-femoral bypass graft.

**Discussion**

The distinctive presenting features in our patient were fever, multiple ulcers over lower limbs and excruciating back pain radiating to lower limbs. The history of claudication of the buttocks, thighs and legs along with continuous, burning and constricting type of pain in the ulcer gave us the clue of ischaemia of the lower limbs. The cold lower extremities and absent peripheral pulses in them further supported it. Colour Doppler and CT angiography confirmed complete obstruction of the lower abdominal aorta just below the origin of renal arteries. This extended into common iliac, as the external and internal iliac were reformed by the collaterals. The involvement of the spine was ruled out by normal X ray and MRI spine. The severe backache and other associated pains, fever and amenorrhea could have been due to ischaemia of the abdominal wall and various pelvic organs and of the lower limbs, while fever could additionally be the result of secondary infection.

Abdominal aorta and the coronary arteries are the foremost sites for atherosclerosis. In this case, the
Abdominal aorta atheroma seemed to have progressed gradually resulting in slow blockage below the origin of the renal arteries up to the common iliac arteries. The slow progression gave enough time for the collaterals to develop, besides the warning signals in the form of claudication, which were neglected.

The uterine and ovarian arteries were reformed by collaterals, but the blood supply was insufficient as apparent from Colour Doppler and CT angiography (narrow arteries) which resulted in ischaemia followed by amenorrhoea (as evidenced by atrophic endometrium on the biopsy). Smaller pelvic arteries were unidentifiable and thus must have been completely occluded. Acute symptomatology is a feature of embolic phenomenon, and thus unlikely in our patient.

In Takayasu’s arteritis generalised symptoms of malaise, fever, arthralgias, anorexia and weight loss remains for months before the patient develops pain over the involved vessels (carotodynia) and ischaemia in the area of supply. The abdominal aorta lesions are usually asymptomatic, but abdominal pain, nausea and vomiting may be seen. CT angiography is characterised by stenosis, irregular vessel walls and aneurysms and concentric arterial wall thickening affecting the aorta and its branches, the pulmonary arteries and coronary arteries and venular calcification at a later stage. This patient had neither of these symptoms and signs nor the Doppler and CT Angiography was suggestive of Takayasu’s arteritis. Further, her upper limb vessels and arch of aorta and its vessels (which are commonly involved in Takayasu’s) were normal and only the right coronary artery showed stenosis. Tubercular aorto-aortitis has been described due to direct spread from an active adjacent tuberculous process or due to deposition of bacilli in the vessel wall from active distant focus. No tuberculous focus could be identified in this patient.

**Conclusion**

This female patient presented with the newer symptoms of occlusion of lower abdominal aorta below the origin of the renal arteries, in the form of severe back pain, flexion posture of the lower limb to avoid pain and inability to extend them and associated painful ischaemic necrotic ulcers over them and amenorrhoea. These features were in addition to pallor and global atrophy of lower limb muscles.

**References**