BUERGER'S DISEASE IN A YOUNG SMOKER; ANGIOGRAPHIC FINDINGS

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ABSTRACT

Buerger's disease or thromboangiitis obliterans is a non atherosclerotic, segmental obliterative vascular disease that affects medium and small sized arteries and superficial veins.[1] It typically occurs in young male smokers, with the onset of symptoms before the age of 40 to 45 years. Progression of the disease is closely linked to continued use of tobacco. Patients present with rest pain, ischemic ulcers, and gangrene of the digits of hands and feet. Large arteries are typically spared, as are the coronary, cerebral, and visceral circulations.[2] Typical angiographic findings have been described that are highly suggestive of the disease. These patterns include diffuse vascular narrowing, occlusions, and a segmental pattern of involvement as well as corkscrew configuration proximally and a tree-root appearance distally.[3]

Key words: Thromboangiitis obliterans, Buerger's disease, Peripheral ischemia.

Case

A 30 year old man with history of heavy smoking for many years was referred to radiology department for right lower limb angiography with complaints of pain in both legs at rest and non healing surgical wound at his right foot. He had undergone amputation of left forefoot 5 years back and amputation of right forefoot 6 months back.

On examination there was an ulcerating non healing wound on dorsum of right foot. Patient was normotensive. The feet were warm. Bilateral femoral pulses were palpable. Peripheral pulses were impalpable in right lower limb.

Angiogram was performed from left femoral approach. It revealed a normal aorta and normal bilateral iliac vessels. The common femoral and profunda femoris arteries on right side were also normal. Abrupt cut off was seen in distal part of superficial femoral artery with multiple cork screw collaterals in distal thigh and leg. There was complete occlusion of popliteal, anterior and posterior tibial and the peroneal arteries (Fig. 1-4).

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Based on gender, age, physical examination and angiographic findings, diagnosis of Buerger's disease was made.

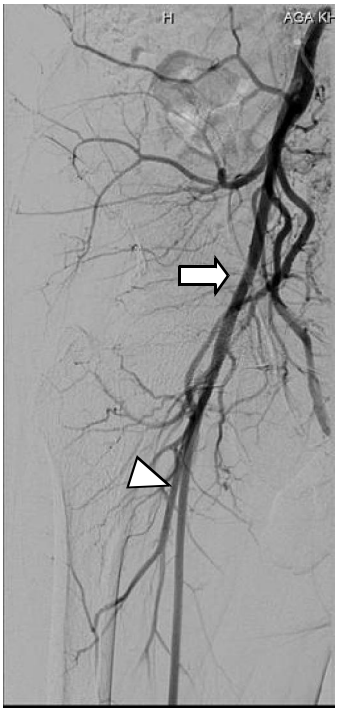

Figure 1: Digital subtraction angiogram of upper thigh and hemipelvis. Normal appearing right common femoral (arrow) and profunda femoris arteries (arrowhead). Proximal superficial femoral artery also appears normal.

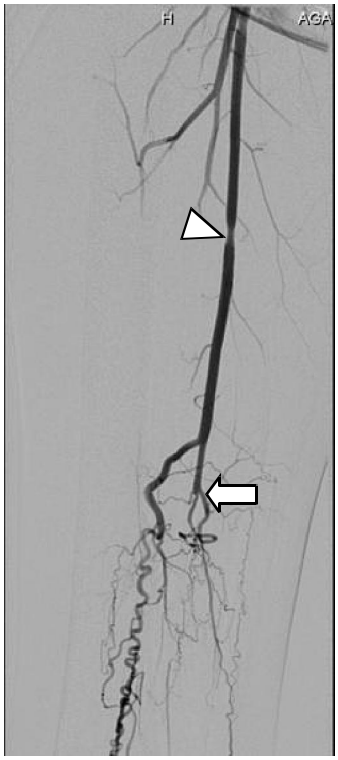

Figure 2: Digital subtraction angiogram of thigh. Abrupt cut off at distal third of superficial femoral artery (arrow). Mild narrowing also noted in proximal part of the artery (arrowhead).

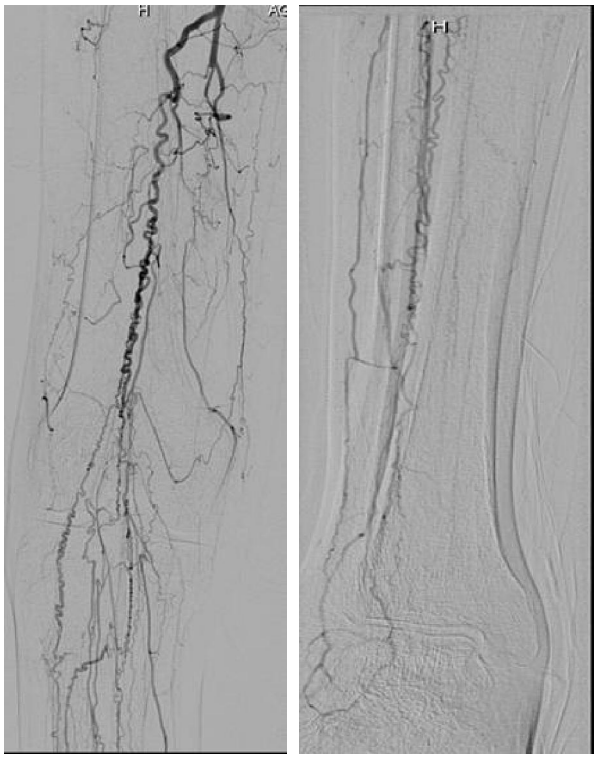

Figure 3 & 4: Digital subtraction angiogram of knee and leg. Extensive corkscrew collaterals in distal thigh and the leg. Note the lack of visualization of popliteal, tibial and peroneal arteries.

Discussion

Initially described in 1908 by Leo Buerger, a New York surgeon and pathologist, Buerger's disease is also called thromboangitis obliterans. It is characterized by development of segmental occlusions of the medium and small arteries of the extremities. It is clinically and pathologically distinguishable from arteriosclerosis and necrotizing arteritis.[2]

The cause and pathogenesis of Buerger's disease are unknown but a strong relationship with cigarette smoking exists. It has only rarely been reported in non-smokers. A few observations have led investigators to implicate an immunologic phenomenon that leads to vasodysfunction and inflammatory thrombi. Patients with the disease show hypersensitivity to intradermally injected tobacco extracts, have increased cellular sensitivity to types I and III collagen, have elevated serum anti–endothelial cell antibody titers, and have impaired peripheral vasculature endothelium-dependent vasorelaxation.[4,5]

The clinical criteria for diagnosis include: age under 45 years; current or recent history of tobacco use, presence of distal-extremity ischemia indicated by claudication, pain at rest, ischemic ulcers or gangrenes and documented by non-invasive vascular testing; exclusion of autoimmune diseases, hypercoagulable states and diabetes mellitus; exclusion of a proximal source of emboli by echocardiography or arteriography; consistent arteriographic findings in the clinically involved and non-involved limbs.[6]

The angiographic features of Buerger's disease are involvement of the small and medium-sized vessels, such as the palmar, plantar, tibial, peroneal, radial, and ulnar arteries and the digital arteries of the fingers and toes; segmental occlusive lesions (diseased arteries interspersed with normal appearing arteries); more severe disease distally, and normal proximal arteries with no evidence of atherosclerosis; collateralization around areas of occlusion (corkscrew collaterals); and no apparent source of emboli.[3,7,8]

The onset of Buerger's disease is rapid and the progression of the disease always depends on the smoking habits of the patient. Although the improvement may not be immediate, the symptoms will be arrested and probably improve after cessation of smoking, except in cases of severe, irreversible ischaemia. Patients who continue smoking are at risk

of gangrene often resulting in amputation of fingers and toes.

Surgical revascularization is usually not possible for patients with Buerger's disease, because of the diffuse segmental involvement and distal nature of the disease. Often no distal target vessel is available for bypass surgery However, if the patient has severe ischemia and there is a distal target vessel, bypass surgery with the use of an autologous vein should be considered.[9-11]

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