

Case Report

Squatting -An Unusual Cause Of Popliteal Artery Thrombosis

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Abstract:

We report a case of acute popliteal artery occlusion in a young male farmer as a result of prolonged squatting

Key Words: Popliteal artery, Thrombosis

Introduction:

We report a hitherto un-described cause of acute popliteal artery occlusion in a young male farmer free from any other medical condition. The occlusion was caused by a thrombus of 10.6mm length, which formed in situ in the popliteal artery, as a result of prolonged squatting by the farmer in the fields in the harvesting season. Prolonged periods of squatting are very commonly endured by farmers in tropical countries during harvesting season. The hyperflexion induced kink of the artery probably caused arterial stasis and intimal endothelial damage. Extreme flexion of the knee, as in squatting, has been implicated as a major cause of common peroneal nerve palsy¹. We could not find any report in the literature surveyed describing squatting induced spontaneous popliteal arterial thrombosis.

Case Report:

A 27-years-old man reported to our institute with painful, swollen, discoloured and cold left leg, for the last 24 hours. He had been engaged in manual harvesting activities in his fields the previous day. After squatting for 7 hours at a stretch, he noticed numbness in his left leg. Assuming it to be a mild problem, he remained confined to his home and did not seek any medical attention. Gradually his limb started becoming pale and bluish and he noticed weakness of ankle movements. He then reported to our institute.

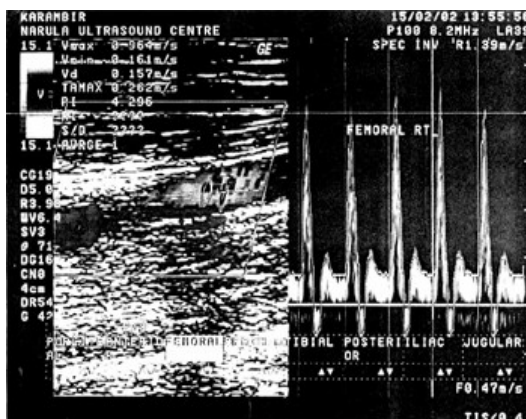
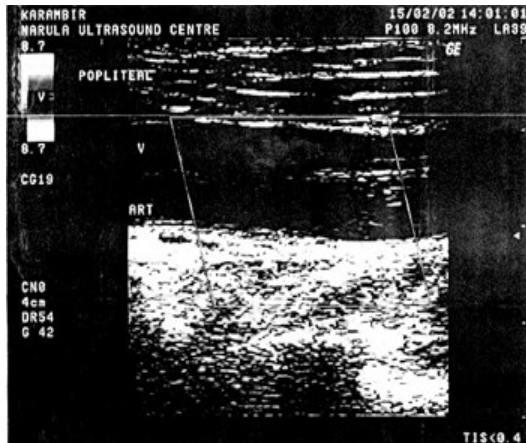
On examination, his left limb had signs of ischaemia below the knee and paraesis of ankle extensors, flexors, evertors and invertors was noticed as

well. The limb was colder as compared to the other side. Gangrenous patches were present in the first, second and third toes and also on plantar surface of sole in an area of 5 by 7cms. No popliteal pulse was palpable and all distal pulses were also absent. Capillary circulation was present but was sluggish. A detailed investigation was carried out. He was found to suffer from no other medical condition. Echocardiography was within normal limits. Tests to rule out systemic infection as a source of infective emboli were negative. Serum cholesterol, blood pressure, AST and ALT enzyme levels, blood lipid profile, coagulation profile were all within normal limits.

Doppler study of the limb showed decreased peak flow velocity in the femoral artery, a 10.6mm thrombus completely occluding the lumen of popliteal artery with no flow distally apart from a few collaterals (Fig 1a & 1b).

Immediate open surgical thrombectomy was performed. Per-operatively, intima of the arterial wall was found damaged. At the last follow-up, the patient had recovered completely, apart from mild sensory deficit over the plantar aspect of the left foot and a mild motor deficit with power grade 4/5 on MRC scale in ankle dorsiflexors.

Fig. 1a & b: Doppler study of popliteal artery showing no flow pattern. Femoral artery flow is sluggish with peak flow velocity of 102cms/second; anterior and posterior tibial arteries and dorsalis pedis artery shows no flow. Few collaterals maintain the distal circulation.



Discussion:

Squatting, a posture commonly adopted by manually harvesting farmers in many countries, is a known cause of common peroneal nerve palsy.^{1,2} This posture involves hyperflexion at the knee and not only unilateral, even bilateral peroneal nerve palsy is known to occur after prolonged squatting.³ The mechanism involves hyper-flexion at the knee, which causes an acute kinking of popliteal vessels in addition to putting pressure on the common peroneal nerve. Prolonged squatting in the present case probably caused stasis of

blood flow secondary to an acute kink in the popliteal artery resulting in development of thrombosis. Possibly, the extreme flexion attitude also caused micro trauma to the endothelium, initiating the coagulation cascade and culminating in a thrombus that totally occluded the arterial lumen.

Acute arterial thrombosis in situ occurs most frequently in atherosclerotic vessels at the site of stenosis or aneurysm, and in arterial bypass grafts. Less frequent causes include trauma to an artery, thoracic outlet syndrome, entrapment of popliteal artery by abnormal placement of medial head of gastrocnemius muscle, polycythemia and hypercoagulable disorders. Acute arterial occlusion has also been reported as the presenting feature in acute promyelocytic leukaemia.⁴ Awareness should also be created amongst Orthopaedic surgeons performing knee arthroplasty as acute popliteal artery occlusion has occurred after a total knee arthroplasty.⁵ None of these aetiological factors could be found in the present case. A review of the available literature did not reveal any report of squatting induced spontaneous popliteal artery thrombosis.

Over the past several decades, preferred treatment options for acute limb ischaemia have alternated between medical and surgical approaches. More recently, direct intra-arterial thrombolysis became the standard of care after several randomised trials demonstrated the benefit of this approach as compared with acute surgical intervention. Despite all of the experience with direct intra-arterial thrombolysis for the treatment of acute limb ischaemia, the optimal thrombolytic approach has not been clearly established.⁶ Percutaneous techniques reportedly offer excellent early and mid-term results in selected patients presenting with acute ischaemia with popliteal and/or tibial arterial occlusion.⁷ Surgical thrombectomy is the method of choice

for treating a large sized thrombus, although controversy still exists regarding the use of thrombolytic therapy and anticoagulants. For traumatic injuries, however, interposition vein grafting using the long saphenous vein is a better alternative. Appropriate handling of acute ischaemic conditions implies the use of both thrombolysis and appropriate surgical procedures, including distal bypass grafts.⁸ Mechanical thrombectomy might offer a useful alternative as a first-line treatment for arterial occlusion when the procedure is performed during the early phase⁹

Farmers, especially of tropical countries, who engage in manual harvesting practises should be made aware of this potentially disastrous complication, and advised to intermittently extend their knees while harvesting, so that such situations can be averted.

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