CASE REPORT

External Iliac Artery Stenosis in a Young Body Builder

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Introduction

With increased interest in vigorous sports for competition or leisure, the number of related injuries has increased. Arterial complications are rare, but have been described in competition cyclists1,2 and long-distance runners.3 We describe a case of isolated stenosis of the external iliac artery in a young body builder.

Case Report

A 23-year-old body builder was seen in clinic complaining of intermittent claudication affecting the left calf and thigh. He had been seen in another unit 1 year previously when an isolated stenotic lesion of the left external iliac artery (EIA) deep to the inguinal ligament was diagnosed and dilated using percutaneous transluminal balloon angioplasty. He was otherwise well except for mild asthma requiring salbutamol inhalers. He had taken anabolic steroids in the past and stopped smoking 3 months prior to consultation. On examination he was normotensive and all the pulses in both legs were palpable. A bruit was heard over the left EIA. Ankle pressures decreased from 110 mmHg to 50 mmHg after a 1 min treadmill exercise test. Angiography (Fig. 1) revealed recurrence of an identical stenosis in the EIA. At operation the systolic pressure in the superficial femoral artery (SFA) was 90 mmHg, compared to 120 mmHg in the brachial artery. After 30 mg papaverine the pressure fell to 30 mmHg

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Fig. 1. Arteriogram showing a smooth stenosis of the left iliac/common femoral artery just deep to the inguinal ligament.
confirming the haemodynamic significance of the stenosis. The diseased segment of the EIA was treated with endarterectomy and patch-angioplasty. The excised tissue looked fibrous and unlike an atheromatous plaque. The patient made an uneventful recovery and is currently asymptomatic having returned to weight training.

Histological examination of the specimen (Fig. 2) showed marked intimal thickening, with proliferation of smooth muscle actin containing cells, presumably myofibroblasts, on immunostaining for actin (Fig. 3). The internal elastic lamina was disrupted. There was no evidence of atheromatous disease.

Discussion

Isolated stenosis of the external iliac artery has been described in long-distance runners and competition cyclists. The cause of this stenosis is asymmetrical intimal thickening which in most cases involves only half or two thirds of the arterial circumference and is sharply delineated from the normal intima. The intimal hyperplasia appears as a somewhat cellular loose connective tissue composed of moderate amounts of collagen and elastic fibres scattered in an alcian-blue-positive matrix. The cells are readily labelled with anti-actin and anti-myosin antibodies, and have features of synthetic smooth muscle cells on electron microscopy. The internal elastic membrane is usually normal. It rarely shows slight dissociation of elastic fibres. The media and adventitia are not affected. The condition usually affects young adults and tends to be unilateral. The aetiology of the lesion is controversial but may result from kinking of the artery caused by extreme flexion of the thigh onto the abdomen to attain an aerodynamic position during cycling, overstressing of the arteries caused by haemodynamic changes (increased cardiac output) in endurance-trained athletes, or by repetitive compression of the artery by the inguinal ligament in long-distance runners. Repetitive compression of the external iliac artery by the inguinal ligament would seem to be the most likely explanation in a competitive bodybuilder. None of these theories explain the unilateral occurrence of the lesion.

The histological appearance of the lesion seen in our case is similar to these previous reports of endofibrosis as described above. The appearance is similar to intimal fibroplasia and myointimal hyperplasia. Intimal fibroplasia accounts for 1–2% of cases of arterial fibromuscular dysplasia and affects both sexes with equal frequency, but in this lesion the internal elastic lamina is always identifiable, long tubular stenoses are more common in young patients, whereas smooth focal stenoses predominate in older patients. Fibromuscular dysplasia of the external iliac artery is uncommon and most reported cases have been more than 50-years-old. Myointimal hyperplasia (intimal thickening with smooth muscle cell hyperplasia in a myxoid matrix) represents arterial response to injury. The internal elastic lamina may be disrupted by procedures such as balloon thromboembolectomy or balloon angioplasty, as in our case. Myointimal hyperplasia following balloon angioplasty is recognised in animal work but rarely described in humans.

Angioplasty of these lesions has been described with good immediate effect but the long-term outcome is inconclusive. Endarterectomy with patch-angioplasty would seem to be the preferred treatment
in these cases,\textsuperscript{1,2} and our patient is doing well at 10 months post-operation.

Thus, with increasing interest in maintaining "an acceptable physique" and greater participation in vigorous sports, more of these lesions may present in young fit people. A high index of suspicion supported by the use of non-invasive vascular assessment is needed to detect these uncommon vascular lesions which seem to be a response to repetitive arterial injury.

References


Accepted 13 December 1994