CASE REPORT

An Acute Lower Limb Ischaemia with an Unusual Cause

L. R. Jiao, A. Ramanathan and J. Ackroyd*

Department of Surgery, Princess Alexandra Hospital, Harlow, Essex, England, U.K.

Acute arterial occlusion associated with an abdominal aortic aneurysm can occur as a result of acute thrombosis or embolism from a mural thrombus of the aneurysm. We report here a case of an unusual association between a seat belt injury and an acute ischaemic leg in a patient known to have an abdominal aortic aneurysm. We also demonstrate some difficult dilemma related to the use of anticoagulation in patients with multiple injuries.

Key Words: Acute ischaemia; Abdominal aortic aneurysm; Embolism.

Introduction

Acute arterial occlusion is a surgical emergency, which requires prompt diagnosis and management in order to prevent the devastating consequences. The aetiology of acute ischaemia is usually either due to acute thrombosis or embolism from a cardiac source or other part of the arterial system.1 2 It is well documented that acute embolism of the lower limb can result from a dislodged mural thrombus of the aneurysm.3 In blunt trauma, vascular injury occurs following a combination of forces exerted on the vessel wall from the direct transfer of the energy on impacts, causing the structural disruption and intimal damages. The management of acute ischaemia in extremities involves immediate surgical thromboembolectomy or thrombolysis.4 5 We report here a case of acute lower limb ischaemia from a common embolic source but with an unusual aetiology.

History

A 68-year-old thin gentleman, who was known to have a 4.0 cm abdominal aortic aneurysm without other pre-existing either large or small vascular disease, presented to us having been involved in a head-on collision with another car travelling at a speed of 30 mph. He was the driver and wearing a seat belt. On arrival in casualty, he was complaining of a painful right knee and a cold right leg. The primary survey revealed a large frontal haematoma. However, the Glasgow coma score was 15/15 and the skull X-ray showed no evidence of fracture. There was, in addition, a closed non-displaced transverse fracture of the right patella seen on initial skeletal X-rays. A careful examination of his vascular system demonstrated an absence of the right femoral pulse and the distal pulses, together with pallor, paraesthesia and paresis in the right leg and foot. His radial pulse was 90 beats per minute in sinus rhythm. A non-tender abdominal aortic aneurysm was confirmed clinically. A quick hand held Doppler ultrasound study in casualty revealed a total absence of the Doppler signals in the right femoral and distal arteries. The abdominal ultrasound showed a 4.8 cm infrarenal aortic aneurysm and a segment of clot attached to the posterior wall moving with the flow of blood. A posterior distal dissection flap was also visualised. Subsequently, further investigations with CT scanning demonstrated a non-leaking abdominal aortic aneurysm (Fig. 1), and arteriography revealed the acute complete occlusion of the right iliac artery with no evidence of collaterals indicating chronic thrombosis (Fig. 2).

The diagnosis of acute iliac artery occlusion from a dislodged mural thrombus of the abdominal aortic
Fig. 1. CT scan of the abdomen. It shows a non-leaking abdominal aortic aneurysm, which has a close contact with the abdominal wall in this thin gentleman.

Fig. 2. Arteriography. This demonstrates an abrupt complete occlusion of the right iliac artery with no collaterals, indicating an acute event.

Aneurysm was suspected and a decision for a prompt right groin exploration was made. At operation, the right femoral artery was found to be soft and free from any atheromatous disease. We then proceeded to a right femoral artery embolectomy via a transverse arteriotomy. Emboli consisting of fresh thrombosis were removed from the right iliac, superficial femoral and popliteal arteries with a Fogarty catheter. On-table angiography revealed good run-off at the end of the procedure. However, we did not attempt the abdominal aortic aneurysm repair simultaneously because of the associated head injury. Postoperatively, there were good Doppler signals in the femoral and distal arteries with the ankle brachial pressure index being 0.7. Intravenous heparin was commenced to prevent further thrombosis and embolism. On the second postoperative day, we noted a sudden onset of deterioration of his neurological states with a reduction of Glasgow coma score from 15 to 11. An urgent CT scan of head was arranged and this confirmed the clinical suspicion of an intracerebral haemorrhage but without evidence of raised intracranial pressure. He was managed conservatively and the intravenous heparin was subsequently stopped. Eventually he made a good recovery and was transferred to a rehabilitation unit for further convalescence. The closed transverse fracture of the patella was managed with the application of a wool and crepe bandage.

Discussion

Acute embolism ensues when there is an impaction of a segment of arterial system by any undissolved material in the circulation carried there by blood flow. The source of emboli is commonly from the cardiac or the aorta and its branches. The commonest site of occlusion of emboli to the limb is femoral and iliac arteries. Clinically, the acute limb ischaemia presents classically with six "Ps": pain, pallor, pulselessness, paraesthesia, paralysis, and perishing cold. Loss of sensation is a critical sign which indicates urgent attention is required to restore the blood flow.

It has been reported that abdominal aortic aneurysm is associated with sudden arterial occlusion as a result of acute thrombosis or embolism from the atherosclerotic plaques or thrombi. Darling et al. discussed in detail 260 patients over a 10-year period, experiencing 426 arterial emboli. Four patients had emboli from mural thrombi in abdominal aortic or iliac aneurysms. Three of their four patients were not known to have the aneurysm prior to the peripheral embolisation. Based on a 4-year study of 133 patients, Lord et al. reported 39 patients with acute emboli from aortic aneurysms, representing 10 per cent of all peripheral embolectomies performed during that period. In our case, the acute limb ischaemia was caused by the dislodged mural thrombi from the abdominal aortic aneurysm as a result of a deceleration seat belt injury to the abdomen of this rather thin man sustained at the time of the car accident. The seat belt must have caused severe blunt trauma to the abdomen at the time of impact, resulting in disruptions of the intramural thrombi of the aneurysm. The dislodged mural thrombi were confirmed clinically at the time of surgery. We have not found any reference to this unusual cause of acute arterial occlusion in the literature.
Anticoagulation needs to be started immediately in patients with established diagnosis of acute thrombosis or embolism for reasons of preventing further thrombosis or embolism and propagation of the already formed thrombosis.\textsuperscript{10-12} However, the use of anticoagulation should be cautious in presence of contraindicating factors such as a recent history of head injury and major surgery, coagulation disorders, diabetic retinopathy and peptic ulcer. In our case, the decision was a difficult one. With the absence of clinical features suggestive of intracerebral damage and skull fracture, we commenced him on anticoagulation at the time of operation in view of his vascular pathology to prevent further embolisation.\textsuperscript{13} This almost certainly contributed to his development of the intracerebral haemorrhage.

An urgent assessment of the arterial system is crucial in establishing the early diagnosis of arterial injuries following trauma. The clinical information obtained from history and physical examination is usually extremely valuable to reach a confident diagnosis of arterial involvement. If in any doubt, assessment of the vascular system with Doppler ultrasound, ultrasound, duplex ultrasound or CT scan needs to be conducted promptly to confirm the clinical suspicion. An aortography is always very helpful in providing additional information in a patient with an abdominal aortic aneurysm presenting with an acute lower limb ischaemia.

References


Accepted 15 January 1998