Injury to the abdominal aorta is relatively infrequent and most reported cases are caused by motor vehicle crashes especially if seat belts are worn. It is important that surgeons dealing with trauma patients keep this diagnosis in their mind even in cases with low energy trauma mechanisms. This case report describes how a low energy blunt trauma can lead to aortic damage when a patient has some promoting factors such as malnutrition and atherosclerosis stiffening of the aortic walls.

**Case Report**

A 61-year-old severely underweight man (BMI 15.3) was carrying newspapers to the trash container and dropped his glove in it. He bent down over the edge of the container to catch his glove and after that he felt pain in his lower back. He could hardly walk 50 m back home to call an ambulance, which took him to the emergency trauma unit. The patient was complaining of pain in the lower back radiating to both legs. In the physical examination the patient was hemodynamically stable, there was no palpable abdominal mass, no tenderness of spine and the patient could move his legs but this movement was painful. Bony structures were normal in the X-ray of lumbar spine. The abdominal aorta was calcified (Fig. 1). Femoral and lower extremity pulses (dorsalis pedis artery) were palpable, but the ultrasound study suggested an abdominal aortic dissection just above the aortic bifurcation.

The patient was transferred to the vascular unit and the computed tomographic scan (CT) of the aorta demonstrated atherosclerotic changes in the infrarenal aorta and in the distal aorta and a free flap like structure in the lumen suggesting an intimal dissection with thrombus (Fig. 2). Angiography disclosed two different flaps in the distal aorta, one 4–5 cm and other 2–3 cm proximal to the bifurcation. The aortic lesion was repaired endovascularly by self expandable Nitinol stent (Memotherm 60×20 mm, Bard) without additional ballooning (Fig. 3). The ankle/brachial pressure index (ABPI) was 0.90/0.89 before stenting and 1.20/1.16 after it. The patient was discharged home 2 days after aortic stenting in a stable condition. Three months after the trauma the patient felt normal, he could walk 5 km without any problems. The ABPI was 1.01/1.14 and the toe pressure was 101/86.

**Discussion**

The incidence of aortic injuries is about 0.04% of all blunt traumas and the mortality rate is about 24%. Intimal disruption is the most common type of blunt aortic damage. The distal intimal flap is often dissected by the blood flow, leading to thrombosis and acute arterial insufficiency. Other lesions include aortic thrombosis, false aneurysm, true aneurysm, aortic rupture, subintimal fibrosis, atheromatous emboli, simple contusion and intramural hematomas. Atherosclerotic changes of the aorta may be associated
with a weakening of the intima in addition to loss of elasticity and compliance and increase the risk of aortic injury. Our patient was a 61-year-old smoker whose remarkable low weight made his atherosclerotic aorta vulnerable even to low-energy blunt trauma as the aorta was crushed between the vertebral spine and the container edge.

Acute arterial insufficiency is the most common early sign of aortic damage after blunt trauma. Other acute symptoms include abdominal pain, back pain, paresthesia, numbness and weakness. The late features are abnormal peripheral pulses, abdominal mass, abdominal bruit, claudication, abdominal pain, back pain, numbness, weakness and impotence. Aortic arteriography is the gold standard to confirm the diagnosis of aortic damage. Aortic CT scan is also a useful imaging modality in these injuries also able to demonstrate coincidental spinal fractures. Our patient was first imaged by plain X-ray and ultrasound, which aroused suspicion of aortic dissection. Later in the vascular unit the aorta was studied with CT scan and finally with angiography after the decision to treat the aortic damage with an endoluminal stent.

The treatment of this condition depends on the state of aortic damage itself and also on associated injuries. Endovascular techniques are promising treatment options for penetrating or blunt vascular trauma, especially in a case of intimal dissection located in the infrarenal aorta in a hemodynamically stable. The disadvantages of endovascular treatment are intimal hyperplasia, risk for injury to uninvolved segments of arteries and lack of long-term results. It has been recommended that catheter embolectomy of the distal vascular bed should be performed in all cases of acute traumatic thrombosis because of peripheral embolization. In our case, the flap compromised the inflow to the legs and probably caused some distal embolization because the patient's creatine kinase (5019 U/l) and myoglobin (831 µg/l) levels rose. Embolectomy was not performed as the patient had reasonably high ABPI.

References


Accepted 10 February 2005
Available online 7 April 2005