Use of bedside ultrasound in identification of a slowly enlarging abdominal mass as a consequence of late femorofemoral crossover bypass detachment

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Abstract

Introduction

The prevalence of intermittent claudication in people over 60 years is 6%. Femorofemoral crossover bypass represents an alternative for patients with unilateral intermittent claudication in which endovascular management is deemed unfavourable. We report diagnostic workout and treatment of an unusual late complication of Femorofemoral crossover.

Case report

An 88-year-old woman presented at the emergency department with a large, tense-elastic, nonpulsing mass in her lower abdomen. In 2002, she underwent a Femorofemoral crossover bypass for right leg claudication. In 2005, the Femorofemoral crossover bypass was complicated by the formation of a pseudoaneurysm that required surgical correction. The patient was urgently brought to the emergency room. The hematoma was evacuated, and a new bypass graft was placed.

Conclusion

Bedside ultrasound made it possible to recognize the fluid nature of a slowly growing abdominal mass that resulted to be the consequence of the detachment of the distal end of a Femorofemoral crossover bypass, and thus to address and speed up diagnostic workout and treatment.

Introduction

Peripheral arterial disease has a prevalence of 15–20% in people over 70 years, while the prevalence of intermittent claudication (IC) in people over 60 years is 6%. Smoking, diabetes mellitus, hypertension, dyslipidemia, hyperviscosity and hypercoagulable states, hyperhomocysteinemia and chronic renal insufficiency (CRI) are considered to be the main risk factors1.

In 1952, Freeman and Leeds described the first right common femoral-to-left common femoral bypass confectioned using the superficial femoral artery2. While initially the femorofemoral crossover bypass (FFCB) was mainly performed in patients with a high surgical risk for aortofemoral revascularization, at present this kind of surgery is considered as an alternative for patients in which endovascular management is deemed unfavourable3. This article discusses the use of bedside ultrasound (US) in the identification of a slowly enlarging abdominal mass as a consequence of late FFCB detachment.

Case report

An 88-year-old woman presented at the emergency department (ED) with a large mass (25 × 15 cm) in her lower abdomen. The mass was covered by strained skin, and a small bleeding ulcer was present on the top of the mass. The patient had significant comorbidities: she underwent hysterectomy in 1980, and she suffered from chronic cerebral vasculopathy with a previous stroke, atrial fibrillation, hypertension and CRI. In 2002, she underwent an FFCB for right leg claudication. In 2005, the bypass graft was complicated by the formation of a pseudoaneurysm that required surgical correction and revascularization of the FFCB.

The relatives of the patient said that the mass became visible 3 months before and slowly enlarged. Two months after the appearance of the mass, they consulted their general practitioner who prescribed a non-contrast-enhanced computed tomography (CT) scan in consideration of the CRI, and subsequently addressed the patient to a surgical outpatient visit. At the surgical visit, the physician appreciated the mass, which had a tense-elastic consistency and was neither painful nor pulsing, and evaluated the CT scan that showed a mass coming from the abdominal wall, not further characterizable. When the mass began to be painful, and a visible abdominal wall skin ulcer that formed began to bleed, the patient was brought to emergency department.

At bedside ultrasound, the mass resulted to have fluid content, with an active flow, confirmed by colour Doppler. A contrast-enhanced computed tomography scan was performed, showing a large pelvic hematoma with the femorofemoral graft within. The patient was urgently brought to the operatory room. The hematoma was evacuated, and a new bypass graft was placed.

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For citation purposes: Cozzi G, Kurihara H. Use of bedside ultrasound in identification of a slowly enlarging abdominal mass as a consequence of late femorofemoral crossover bypass detachment. OA Case Reports 2013 Aug 08;2(8):76.
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The mass. Particularly, the right lower limb was not significantly colder than the contralateral. Bedside US was performed: the mass resulted to have a fluid content, which seemed to have an active flow, confirmed by colour Doppler. Considering the medical history, the vascular surgeon was immediately alerted, while blood examinations and an urgent contrast-enhanced CT scan were performed. Serum haemoglobin (Hb) was 8.2 g/dl and the CT showed a large pelvic haematoma extending up to the subcutaneous fat and skin, with maximum axial diameter of 23 cm; the FFCB graft was visible within the haematoma. Contrast-enhanced images showed an important detachment of the distal extremity of the bypass, while the proximal anastomosis seemed to be intact (Figure 2).

The patient was urgently brought to the operating room. The FFCB was isolated and clamped after systemic heparinization. A suprapubic incision was performed and a huge haematoma was evacuated; the distal extremity of the bypass was explored, resulting detached for 75% of its circumference. The distal two-thirds of the bypass were excised, and a collagen and silver acetate-coated polyester bifurcated graft was anastomosed to the proximal part of the old bypass and to the superficial and deep femoral arteries with a 5/0 polypropylene running suture.

After surgery, serum Hb was 7.4 g/dl, so the patient received blood transfusion. Afterwards, the patient developed bilateral pneumonia, which was assessed with chest X-ray performed because of elevation of white blood cells and C-reactive protein and treated with intravenous piperacillin/tazobactam. The general conditions of the patient initially improved, but, 19 days after surgery, a sudden cardiac arrest caused her death.

Discussion

This case report deals with a rare late complication of an FFCB, which
developed insidiously. The main complications reported for FFCB are early graft thrombosis, major limb amputation, infection, haemorrhage, seroma and lymphocele. A case of bilateral direct-type inguinal hernia due to the division of the inguinal ligament and of the musculoaponeurotic borders of the internal ring during surgical exposure of the common femoral and external iliac arteries has been described.

In our case, 3 years after the first surgery, a pseudaneurysm with graft thrombosis developed, requiring reintervention. After that, 7 years passed before the abdominal mass appeared. The conditions of the patient, who was an 88-year-old and suffered from chronic cerebral vasculopathy but still lived alone, made it possible for the mass to remain unrecognized until it became visible to the relatives of the patient through her clothes. The characteristics of the mass, which had a tense-elastic consistency and was neither painful nor pulsing, associated with the very slow growth and the complete absence of symptoms suggestive for acute anemia, made a clinical diagnosis difficult. Noncontrast-enhanced CT also failed to determine the origin of the mass.

These considerations put in evidence once more the role of bedside US in the ED. The clinical use of bedside US as part of the physical examination by attending emergency physicians has significantly increased over the last decade years. Apart from the focused assessment with sonography for trauma, which helps to diagnose haemoperitoneum in multi-trauma patients, bedside US provides the clinician with critical information about the aorta, gallbladder, pancreas, kidneys and urinary bladder.

In this case, US made it possible to identify the active flow within the mass, which was also confirmed by colour Doppler, while contrast-enhanced CT was performed only in order to help the vascular surgeon to plan emergency surgery.

**Conclusion**

Bedside US made it possible to recognize a large, tense-elastic, slowly growing abdominal mass as a rare late complication of an FFCB, due to the detachment of the distal end of the graft.

**Abbreviations list**

CRI, chronic renal insufficiency; CT, computed tomography; ED, emergency department; FFCB, femorofemoral crossover bypass; Hb, haemoglobin; IC, intermittent claudication; US, ultrasound

**References**