

A rare cause of heart failure*

N. Moatassim Billah, L. Hammani, F. Z. Gueddari, A. Ajana, I. Nassar

Department of Radiology, University Hospital Ibn Sina, Mohammed V University at Souissi, Rabat, Morocco
Email: moatassimbn@hotmail.com

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ABSTRACT

Vascular complications of lumbar disk surgery are recognized but rare, iliac arteriovenous fistula is the rarest. It may cause massive shunt flow, leading to congestive heart failure and venous hypertension. We present a case of a 48-year-old woman, who had symptoms of heart failure and with a hypogastric pulsatile abdominal mass that irradiated a continuous murmur extending to the right lumbar region. The abdominal CT showed an arteriovenous fistula between the right common iliac artery and the right common iliac vein near the inferior vena cava caused by surgery for a herniated intervertebral disk.

Keywords: Arteriovenous; Fistula; Spinal; Disk; Surgery; Heart; Failure

1. INTRODUCTION

Vascular injuries that complicate intervertebral disk surgery are rare. Iliac arteriovenous fistula is the rarest, a procedure that can affect even the urinary tract because of the close anatomical relationship. The mechanism of AV fistula formation in lumbar spine surgery is penetration of the anterior longitudinal ligament with dissecting instruments, injuring the aorta, vena cava, or iliac vessels. The imaging diagnostic, especially if it is early, can both resolve the immediate problem and prevent severe and permanent hemodynamic sequelae affecting the heart.

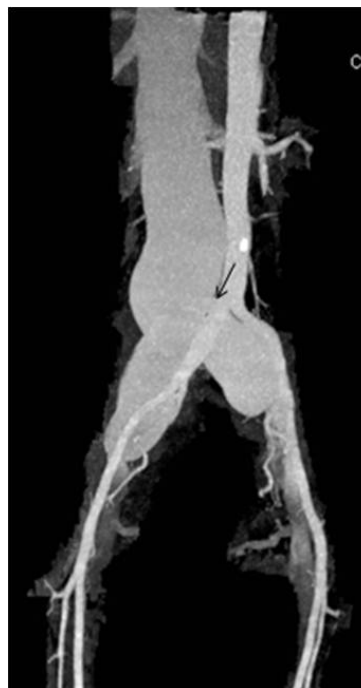
2. CASE REPORT

A 48-year-old woman, was admitted to the hospital for fatigue and dyspnea. Physical examination on this admission revealed a blood pressure of 120/60 and a regular pulse of 80.

Four months again later the patient presented with hypogastric pain, which prompted a second consultation. Clinical examination objectified hypogastric pulsatile ab-

dominal mass, which the palpation produced pain, and a continuous murmur irradiated from it, extending to the right lumbar region. In this place, near the vertebral column, we found a very thin, small scar, the result of spinal disk surgery 2 years before, which the patient had not mentioned when his history was taken. On the other hand, physical examination revealed findings of congestive heart failure; we noted the presence of hepatomegaly, and lower extremity edema.

An additional abdominal CT was performed. A contrast medium-enhanced computed tomography (CT) scan indicated caval filling in the arterial phase of the scan and an enlarged vena cava, consistent with central venous overload. The CT also showed dilatation of the inferior vena cava, right and left common iliac vein. It demonstrated a fistulous connection between the right common iliac artery and the right common iliac vein near the inferior vena cava measuring 10 mm.



*No conflict of interest.

3. DISCUSSION

The location and relative immobility of the great vessels anterior to the lumbar spine render them particularly vulnerable to injury during intervertebral disk operation, especially at L-4-5 level [1]. To understand the vascular anatomy important to vascular injury after intravertebral disk surgery, Anda *et al.* [2] reviewed the computed tomographic (CT) images of 50 patients referred with low back pain or sciatica. They found that at the L4-5 disk space, the aorta had bifurcated into right and left iliac arteries in 98% of patients. On the other hand, the common iliac veins had merged to form the inferior vena cava in all but 6% of patients at the same level. Some part of the inferior vena cava or left iliac vein was located posterior to the right iliac artery in nearly all patients and behind the left iliac artery in 44% of patients.

Injury may cause laceration of the vessel with acute life threatening retroperitoneal haemorrhage, formation of pseudoaneurysms or arteriovenous fistulae in the late phase [3].

The incidence of arteriovenous fistulae after intervertebral disk surgery is unknown. It is, however, not rare. Fistula formation can involve the right iliac artery to iliac vein (29%), left iliac artery to left iliac vein (26%), right iliac artery to inferior vena cava (22%), right iliac artery to left iliac vein (13%), and aorta to inferior vena cava (9%) [4]. Jarstfer [5] reported that arteriovenous fistula symptoms appeared at 24 h (9%), 24 h to 1 year (70%) and after 1 year (21%).

Often, a fistula is suspected only after the development of high-output cardiac failure and its associated symptoms of tachycardia, systolic hypertension, dyspnea on exertion, orthopnea, cardiomegaly, pleural effusions, ascites with hepatomegaly, and lower extremity edema. Patients may describe symptoms of claudication in the leg supplied by the injured artery.

In most cases reported in the literature the authors insist on the place of arteriography for the demonstration of the fistula arerio intravenous, however, with newer generations of scanners we offer this non-invasive means for diagnosis, which we have to think when in front of

unexplained right heart failure with a history of spinal disk surgery.

An operative correction of the arteriovenous fistula was the only curative option. Currently because endovascular repair offers complete resolution, accurate diagnosis is essential [6].

Sealing of common iliac artery or abdominal aortic lesions as a complication of lumbar-disc surgery with a stent graft is effective and is suggested as an excellent alternative to open surgery for iatrogenic great-vessel injuries, particularly in critical conditions [7].

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