Endovascular treatment of acquired arteriovenous fistula with severe hemodynamic effects: a case report

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Disclosure

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I have the following potential conflicts of interest to report:

- [ ] Consulting
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)

[ ] I do not have any potential conflict of interest
Is unilateral leg edema always associated with venous or lymphatic disease?

Consent
Informed consent was obtained from the patient for publication of this case report and any accompanying images.
Presentation of the case

A 57-year-old male patient visited his GP complaining of flank pain and peripheral swelling in his left leg.

History – obesity, tobacco abuse and chronic obstructive pulmonary disease (COPD), but no history of hypertension or heart disease.

There was no history of trauma or previous surgery.

Physical examination - pitting edema of his left leg.

Deep venous thrombosis (DVT) was excluded.
Preoperative condition

During 5 months:

He had a progressive left leg swelling with mottling, worsening left leg claudication, fatigue, gradual progressive breathlessness and recurrent cough

Clinically diagnosed: deterioration of congestive cardiac failure
Echocardiography (ECHO): pulmonary hypertension, distended right ventricle (RV) with tricuspid regurgitation and compression of left ventricle (LV) - „D shape“, high output heart failure with associated mega-Cava, CT was indicated
Abdominal CTA revealed:

1. An incidental isolated infrarenal abdominal aortic dissection with a diameter of 30 mm,

a left common iliac artery aneurysm (CIAA) of maximum diameter 53 mm,

a right CIAA with a maximum diameter of 35 mm,

stenotic right hypogastric artery with post-stenotic dilatation
Abdominal CTA revealed:

2. The left common iliac artery aneurysm (CIAA) associated with an arteriovenous fistula: between the aneurysm and common iliac vein (CIV)
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Early enhancement of the inferior Vena Cava (IVC) was a direct clue as it was seen in the arterial phase, the left iliac vein (LIV) was more enhanced than the right iliac vein (RIV)
Abdominal CTA revealed:

3. Inferior Vena Cava (IVC) grossly distended with a diameter of 47 mm in its full course

4. No bleeding or hematoma in retroperitoneal space

Edema in the patient’s left leg on admission
Intervention

Performed endovascular treatment:

Embolization coils (Cook Medical IMWCE) into hypogastric arteries and bifurcated stent graft (Medtronic Endurant II) were placed.
The follow-up CTA (1 month) showed:
Decrease of Vena Cava diameter (-12 mm),
but minimal thrombus in left CIAA with endoleak type II & persistent AVF
Re-intervention

Further embolization of the feeding artery and left CIAA was indicated & carried out

Approach:
Transvenous, cross over access from the right femoral vein through the AVF, supporting balloon inserted into left iliac vein to prevent coil migration
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The postinterventional recovery was uncomplicated, he was discharged 7 days after procedure.

The leg edema gradually improved without further medication, breathlessness immediately and significantly relieved, claudication (which had reflected a steal phenomenon) was subsequently fully reversed following exclusion of the AVF. Discoloration remained.
CTA follow-up after 1 month showed:

Thin Vena Cava (-27 mm in comparison with initial CT), AVF without filling. Endoleak disappeared.

Normal RV + LV shape on the ECHO
Summary of the case report

Common iliac artery aneurysm ruptured directly into the left iliac vein, creating a fistula with consequent venous hypertension, leg swelling and heart failure - clinical presentation was significantly different from typical ruptured aneurysm case.

The severity of the symptoms are related to the location and the size of the AVF. Peripherally located AVFs more often result in locally recognized effects, whereas centrally located AVFs are linked to systemic symptoms.

AVF should be considered when examining a patient with unilateral leg edema and without DVT.

Although such condition is extraordinary, timely diagnosis and endovascular treatment is recommended.
Thank you

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