CASE REPORT

Treatment of Acute Iliocaval Caval Thrombosis Due to Retroperitoneal Fibrosis Using Catheter-directed Thrombolysis and Stenting

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Introduction

Retroperitoneal fibrosis (RPF) is an inflammatory condition leading to extensive fibrosis which can compress all the structures passing through the retroperitoneum. Although ureteric, nerve, aortic and iliac artery compression are the most frequently described complications, significant large vein obstruction can occur. This is usually a chronic event, with symptoms often presenting for 2 years or more. We describe the first documented case of acute iliocaval thrombosis due to RPF treated using catheter-directed thrombolysis and stenting.

A 55-year-old man was admitted as an emergency with a 1-week history of back pain and a 5-day history of increasing bilateral leg swelling, associated with prominent anterior thoracic and superficial abdominal wall veins. There was no history of diabetes mellitus, although previous bilateral buttock and thigh claudication due to minor aorto-iliac disease was managed conservatively. On direct questioning he gave a 4-year history of erectile impotence and had smoked 20 cigarettes a day for the last 30 years.

Examination revealed distended chest and abdominal wall veins but neither abdominal nor rectal masses. Both legs were swollen with oedema to the iliac crest, femoral pulses were palpable and triphasic arterial doppler signals were present distally.

Investigations revealed an erythrocyte sedimentation rate (ESR) of 18 and contrast-enhanced spiral CT and MRI scans of his abdomen showed abrupt tapering of the lumen of the IVC 2 cm caudal to the right renal vein with associated tapering and soft tissue cuffing. There was no evidence of extrinsic IVC compression. Further caudally, the IVC and common iliac veins were distended with thrombus.

Technique

Ascending venography, via 5 Fg sheaths in both common femoral veins (William Cook Ltd., U.K.) confirmed complete occlusion of both common iliac veins, with multiple collateral channels. After transjugular insertion of a Cordis Prolyser temporary IVC filter via an 8.5 Fg sheath (Cordis, U.K.), 4 Fg straight flush catheters (Mallinckrodt Medical, U.K. Ltd.) were inserted via each femoral vein sheath and the thrombus “laced” with 10 mg rTPA (Actilyse, Boehringer Ingelheim, Germany) over the first hour. Thrombolysis commenced with continuous infusion of rTPA at 1 mg/h through each catheter and heparin at 150 U/h through each sheath. Check venography 5 h later showed minor improvement and a 3 mm J fixed guide wire (William Cook U.K. Ltd.) was passed via the obstructed segment to the upper IVC. Eight-millimetre balloon angioplasty was performed (Meadox U.K. Ltd.), but the lumen collapsed immediately on balloon deflation and a small leak occurred in the region of the right common iliac vein. The catheter was left across the stenosis, TPA was stopped and iv heparin continued via the sheaths and the catheter at 1000 U/h.

The next morning (16 h later) venography showed no significant change, and therefore two further 5 mg boluses of TPA were infused into the left common "laced" with 10 mg rTPA (Actilyse, Boehringer Ingelheim, Germany) over the first hour. Thrombolysis commenced with continuous infusion of rTPA at 1 mg/h through each catheter and heparin at 150 U/h through each sheath. Check venography 5 h later showed minor improvement and a 3 mm J fixed guide wire (William Cook U.K. Ltd.) was passed via the obstructed segment to the upper IVC. Eight-millimetre balloon angioplasty was performed (Meadox U.K. Ltd.), but the lumen collapsed immediately on balloon deflation and a small leak occurred in the region of the right common iliac vein. The catheter was left across the stenosis, TPA was stopped and iv heparin continued via the sheaths and the catheter at 1000 U/h.

The next morning (16 h later) venography showed no significant change, and therefore two further 5 mg boluses of TPA were infused into the left common
iliac vein thrombus at 15-min intervals. The TPA infusion was continued at 2 mg/h and heparin was continued via the other ports.

Venography 6 h later confirmed complete lysis of the clot. The IVC stenosis was dilated with a 10 mm balloon angioplasty catheter (Meadow U.K. Ltd.) and a 30 mm (diam) × 50 mm (length) Gianturca stent (Cook-Z stent, William Cook Europe A/S) was deployed at the IVC stenosis. Contrast confirmed flow through the stent into the infrarenal IVC with diminished collateral flow. The upper portion of the stent only expanded to 10 mm.

IV heparinisation was continued for the next 2 days and then an inferior venacavagram confirmed patency of the stent with no evidence of further thrombus. The transjugular IVC filter was removed and the patient was warfarinised and discharged with the INR in the range 2.5–3.5.

At outpatient review his legs had returned to their normal size and the trunk veins had disappeared. He continues to take warfarin, is wearing below knee class II stockings and remains symptom-free 9 months later.

Discussion

Retroperitoneal fibrosis (RPF), described by Ormond in 1948, is an idiopathic process involving the soft tissues of the retroperitoneum usually in middle-aged to elderly men who develop chronic inflammation and fibrosis around the lower abdominal aorta. Its aetiology is unknown but it is associated with aortic atherosclerosis and may be an immune-mediated response to severe atherosclerosis. Secondary RPF can be caused by neoplasms, infection, trauma and drugs (e.g. methysergide, methyldopa) and inflammatory abdominal aortic aneurysms.

The inflammatory process drags neighbouring hollow structures towards the midline and the disease usually presents urologically with obstruction of one or both ureters. Constriction of the abdominal aorta and iliac arteries can also occur in RPF, but symptomatic obstruction of the iliocaval tree by this process is very rare.

Rhee et al. (1994) retrospectively reviewed 340 cases of RPF seen at the Mayo Clinic, Rochester, U.S.A. between 1976 and 1993 and found seven patients (2%) with iliocaval venous obstruction. Six had chronic venous obstruction and one had acute iliocaval thrombosis 10 days following a thrombectomy at the referring hospital for chronic obstruction. There were no cases of acute iliocaval thrombosis. The mean duration of symptoms was 26 months and all presented with leg swelling. Three had venous claudication, three had stasis skin changes, and two had ulceration. Five patients were treated conservatively with lower extremity elevation, compression stockings and an exercise program. All patients were anticoagulated, and two patients with chronic disabling extremity oedema and venous claudication underwent venous reconstruction. They reviewed the literature and found a total of 17 cases of RPF patients with symptomatic iliocaval compression or obstruction (including their own) and recommended conservative management (as above) with anticoagulation and a trial of steroid therapy as the first line of treatment, saving reconstructive surgery for patients with severe symptoms.

Since that paper, advances in interventional radiological techniques mean catheter-directed thrombolysis following vena cava filtration is now used for severe deep vein thrombosis with marked venous outflow obstruction and potential limb loss or end-organ injury. Balloon angioplasty and stent insertion are also tackling both benign obstruction of the hepatic inferior vena cava or hepatic veins (Budd–Chiari syndrome) and malignant obstruction (the IVC syndrome).

In this case we used catheter-directed thrombolysis following the insertion of a temporary vena cava filter to lyse the thrombus, followed by primary stenting of the IVC stenosis. This produced complete and lasting resolution of symptoms. A literature review has revealed only one other case report of the use of stenting in iliocaval stenosis in RPF, and as this was not an acute thrombosis neither catheter-directed thrombolysis nor a temporary vena cava filter were used.

In conclusion, this is the first documentation of acute iliocaval thrombosis complicating RPF treated by catheter directed thrombolysis and primary stenting. The authors feel that, following the insertion of a temporary vena cava filter, this is the treatment of choice for this rare complication of RPF.

References

Thrombolysis and Stenting for Acute RPF Iliocaval Thrombosis


7 Griffith JF, Mahmoud AEA, Cooper S, Elias E, West RJ, Olliff SP. Radiological Intervention in Budd–Chiari Syndrome: techniques and outcome in 18 patients. *Clin Radiol* 1996; 51: 775–784.