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May-Thurner Syndrome, the Role of Endovascular Intervention with Review of Published Treatment and Follow up Strategies

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Abstract

May-Thurner syndrome is a unique condition that strikes mainly young people. Its prevalence is likely underestimated and perhaps ranges from 22 to 32%. May-Thurner is under reported and often miss-diagnosed in accident and emergency, which can result in long term complication (post thrombotic syndrome) with its detrimental effect in this young age group. We describe a case of May-Thurner syndrome, a near miss, with review of published treatment and follow up strategies. This includes direct catheter thrombolysis, angioplasty, stenting, and IVC filter placement. Our patient has made a good recovery on follow up.

Introduction

May-Thurner syndrome (MTS), also called iliocaval compression syndrome, Cockett's syndrome, or non-occlusive iliac vein lesion, occurs secondary to compression of the left iliac vein by the overriding right iliac artery [1]. From autopsy studies, MTS accounts for 2-3% of lower limb deep vein thrombosis [2]. However; it is often underreported and miss-diagnosed in accident and emergency, resulting in long-term complication (post thrombotic syndrome) with its detrimental effect [3]. Possible mechanisms include vascular trauma to the vein from repetitive compression from the overlying pulsating artery, causing elastin and collagen deposition in the iliac vein, which eventually leads to spur formation [4].

Usually doppler ultrasound will detect if a deep vein thrombosis is present in the iliac vessels, but is unable to visualize iliac vein compression and spurs. Diagnostic modalities include helical abdominal computed tomography (CT), magnetic resonance venography (MRV), intravenous ultrasound (IVUS) and conventional venography would allow accurate diagnosis and facilitate in management planning [5].

Clinical Presentation

A 33-year-old woman presented with acute onset pain and swelling of left leg following two intense running episodes for charity. Apart from taking regular oral contraceptive pills (OCP), she had no previous history of trauma, surgery or deep vein thrombosis. On her first presentation to the accident and emergency department, she was reassured. Few days later, she represented when her left leg duplex ultrasonography didn't identify any clots in the left leg.

CT abdomen and pelvis with subsequent venography demonstrated isolated extensive left common and external iliac veins clot burden due to an external compression rather than intramural thrombosis (Figures 1-3).

Hematological tests including complete blood count (CBC), coagulation screenings were normal and thrombophilia screening was negative.

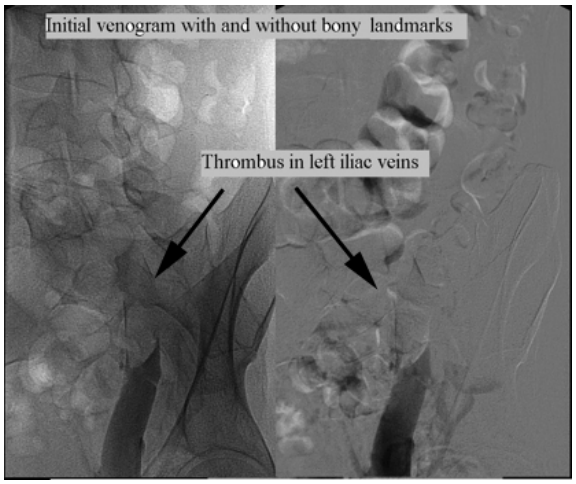

Figure 1: Initial angiographic image demonstrating left iliac veins thrombosis.

The duration of symptoms of acute DVT in our patient was 6 days. Initially a retrievable inferior vena cava filter was placed using contralateral femoral approach. Staged catheter-directed thrombolysis treatment was then performed for two days, resulting in partial resolution of thrombus with persistent stenosis.

On the third day, a pelvic venogram revealed partial compression of left common and external iliac veins consistent with MTS (Figure 4). Left common and external iliac veins were angioplastied then stented with a self-expanding stent (Figure 5) with no immediate complications.

Patient was discharged home the following day on therapeutic low molecular heparin. One week later, she had uncomplicated IVC filter retrieval and a venogram showing patent iliac stent (Figure 6).

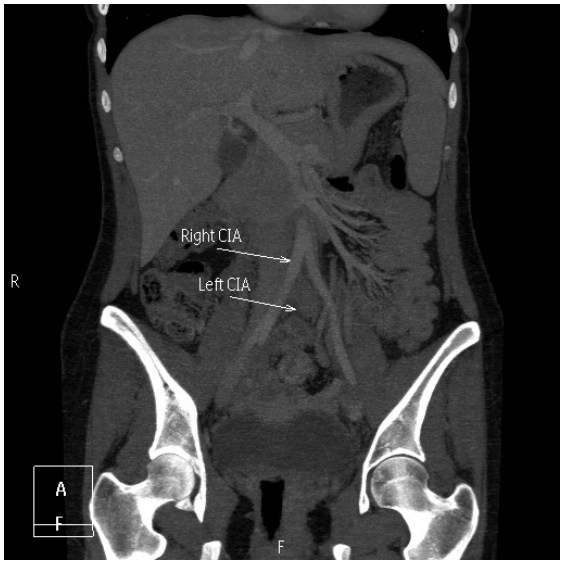

Figure 2: Initial coronal CT image demonstrating left iliac artery relation to left iliac vein.

Warfarin was gradually introduced and continued for six month. Subsequently, clopidogrel was given as life-long medication. OCP was switched to another contraception method. Leg swelling and oedema resolved with one-year follow up duplex scan showed patent iliac veins and patient remained asymptomatic.

Figure 3: Initial axial CT image demonstrating left iliac artery relation to left iliac vein.

Discussion

Iliac vein compression is a frequent anatomic variant and is incidentally encountered on a few cross-sectional imaging studies. More than 50% luminal compression of the left iliac vein can be seen in up to 25% of asymptomatic healthy individuals [6].

We believed that MTS occurred in this case as a result of intense exercise causing haemodynamic changes in venous flow or venous pressure, which was exacerbated by OCP intake leading to acute DVT.

The mainstay of treatment of proximal iliofemoral obstruction in acutely symptomatic patients, is catheter directed thrombolysis plus angioplasty [7].

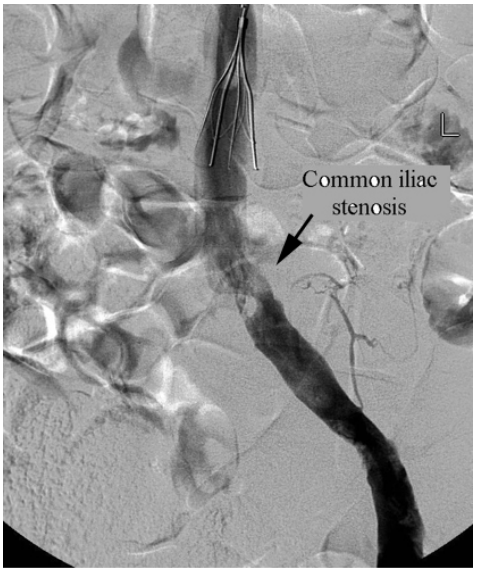

Figure 4: Persistent common iliac vein stenosis despite thrombolysis.

Embolic event has been previously reported in MTS [8]. Thus we elected for prophylactic IVC filter placement prior to angioplasty to reduce risk of pulmonary embolism.

Despite angioplasty, residual iliac thrombosis and stenosis demanded further considerations. There is increase evidence of stenting and early aggressive treatment of proximal iliofemoral thrombosis with good medium to long-term patency rate (84%) [9]. of note, surgical correction of iliofemoral or caval obstruction options should only be reserved for patients in whom endovascular options have failed or not feasible [10]. Current evidence suggests that patients in whom thrombosis develops may be at higher risk for recurrent DVT. Post thrombotic syndrome has been reported in patient with MTS despite iliac stenting and therapeutic anti coagulation with low molecular weight heparin [11].

Other alternative options to warfarin include the use of noval oral anticoagulants (NOAC), also known as non-vitamin K antagonist anticoagulant. These include dabigatran etexilate, which inhibits thrombin, and rivaroxaban, apixaban, and edoxaban, which inhibit factor Xa. These agents are effective alternatives to vitamin K antagonist for the treatment and prevention of venous thromboembolism and for stroke prevention in atrial fibrillation and for the prevention of recurrent ischaemic events after acute coronary syndrome. Currently, there are no specific antidotes available for the NOACs, which can complicate the management of life-threatening bleeding. Furthermore, The NOACs have variable effects on commonly

available routine tests of coagulation, which may complicate assessment of their anticoagulant activity [12].

Figure 5: Immediate post common iliac stent deployment.

Figure 6: One week post common iliac stent insertion.

One year follow up, our patient remained asymptomatic and left iliac vein was patent. This was in agreement with a prospective stent evaluation study of 15 patients with MTS with 80% remained asymptomatic over a medium follow up of 16 months. All three of the symptomatic patients (20%) were reported to have mild symptoms. Stent occlusions developed in two patients; one patient had mild oedema, and the other remained asymptomatic [13]. Learning point MTS is under reported yet the diagnostic accuracy is critical since it often afflicts young patients and requires endovascular management. We believe that combination of dehydration and OCP provoked the development of iliac vein thrombosis. This emphasizes the need for patient selection and follow-up protocol in those young patients to reduce such complications. Large registries are needed to define the optimal treatment strategy and follow up protocol.

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