A Comprehensive Review Article on May-Thurner or Cockett Syndrome

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Abstract

May-Thurner syndrome—it is also called iliocaval compression syndrome, Cockett syndrome or iliac vein compression syndrome, which occurs secondary to compression of the left iliac vein by the overriding right iliac artery. In the mid-19th century, it was observed that deep vein thrombosis was five times more prone to occur in the left leg. Risk factors for MTS are Female gender, especially those who are postpartum, multiparous, or using oral contraceptives.Clinical presentations of symptomatic MTS include, acute extremity pain and swelling, venous claudication, or chronic development of symptoms/signs of venous insufficiency. The diagnosis of May-Thurner Syndrome is based on the clinical presentation of left lower extremity swelling and pain in association with radiologic evidence of compression. Doppler ultrasound will identify if there is a DVT is present in the iliac vessels, but is unable to visualize iliac vein compression and spurs.In the absence of DVT and for patients with only mild symptoms of left leg swelling or pain, conservative measures of prevention are used, specifically, compression stockings. These are also used if the severity of MTS requires more aggressive invasive interventions.

Keywords: *Deep Vein Thrombosis, MTS, & Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis.*

Introduction

May-Thurner syndrome–also called iliocaval compression syndrome, Cockett syndrome or iliac vein compression syndrome–occurs secondary to compression of the left iliac vein by the overriding right iliac artery. Virchow was the first author to be credited with describing iliac vein compression. It was not until 1957 that May and Thurner brought much attention to the anatomic variant thought responsible for Virchow's observation. They found that the right iliac artery compressed the left iliac vein against the fifth lumbar vertebra in 22–32% of 430 cadavers. In the mid-19th century, it was identified that deep vein thrombosis was five times more likely to occur in the left leg.[1]

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Etiology and Incidence: The incidence of May-Thurner syndrome is still unknown and ranges from 18–49% among patients with left-sided lower extremity DVT.[2]DVT is more common in the left lower extremity compare to the right, and May-Thurner syndrome is known risk factor for patients with left-sided iliofemoral DVT.[3] Risk factors for MTS are Female gender, especially those who are postpartum, multiparous, or using oral contraceptives. Scoliosis may predispose to MTS due to compression from the lower lumbar vertebra, dehydration, hypercoagulable disorders, and cumulative radiation exposure.[4,5]

Signs & symptoms: The majority of individuals with MTS anatomy are asymptomatic, but progression of the venous lesion can cause symptoms related to hypertension. Clinical presentations of symptomatic MTS include, acute extremity pain and swelling, venous claudication, or chronic development of symptoms/ signs of venous insufficiency. Female patients can also present with pelvic congestion syndrome related to underlying MTS.[6] This phenomenon is due to venous

outflow obstruction. Venous claudication is defined as the presence pain at thigh or leg and tightness with exercise, which subsides with rest or elevation.[7] The classic clinical presentation is that of a younger female in the second or third decade of life with chronic oedema over left lower extremity.[8]

Diagnosis: The diagnosis of May-Thurner syndrome is based on the clinical presentation of left lower extremity swelling and pain in association with radiologic evidence of compression. Doppler ultrasound will identify if there is a DVT is present in the iliac vessels, but is unable to visualize iliac vein compression and spurs. Other diagnostic modalities like computed tomography (CT), CT venography, magnetic resonance venography (MRV), intravenous ultrasound (IVUS) and conventional venography.[9] Above mentioned imaging techniques may help in planning catheter-directed thrombosis without the initial need for conventional venography. These non-invasive imaging modalities are simple, efficient and cost-effective in diagnosing DVT associated with iliac compression.[3]

Treatment: Management of the underlying defect is depending on the severity of the clinical presentation. Leg oedema and pain is best evaluated by vascular specialists who both diagnose and treat arterial and venous diseases to ensure that the cause of the extremity pain is evaluated. The diagnosis needs to be confirmed with some sort of imaging.[10]

Nonthrombotic MTS with no or mild symptoms— In the absence of DVT, for patients with no or only mild treatment is conservative; compression stockings are usually sufficient for relieving symptoms.

Nonthrombotic MTS with moderate to severe symptoms—For advanced nonthrombotic MTS with symptoms/signs of advanced chronic venous insufficiency and skin discoloration, treatment is targeted toward reducing the severity of the stenotic venous lesion using angioplasty and stenting of the affected segment. Angioplasty of the venous stenotic lesion alone is not sufficient and is associated with high recurrence rates.[11] Angioplasty and stenting of MTS lesions also decreases the recurrence rate of superficial reflux following ablation therapies.[12] Following stenting, concurrent antiplatelet therapy is reasonable, provided bleeding risk is low.[13] For an occluded iliac vein, surgical bypass options include cross-femoral venous bypass performed.[14] Thrombotic MTS with contraindications to lytic therapy — For patients suspected to have MTS but who have contraindications to lytic therapy, catheter-directed thrombolysis including suction thrombectomy or open surgical thrombectomy are warranted. If thrombolysis is contraindicated, an open cut-down via a common femoral venotomy may be needed to evacuate gross thrombus and to uncover the lesion.[15,16,17]

The open surgical approach includes dissection of the iliac vein from the overlying iliac vein, open thrombectomy, and possible patch angioplasty of the left iliac vein, possibly adding adjunctive procedures, such as an arteriovenous fistula to enhance flow in the diseased vein.[11] Efficacy of endovenous therapy — Prior to refinement of endovenous techniques, thrombotic lesions were treated with anticoagulation or open surgical thrombectomy with dismal results. There was no standard therapy for non-thrombotic MTS.[18,19]

Advancements in minimally invasive techniques and devices have been instrumental in providing the means to treat iliofemoral stenotic lesions and for decreasing the long-term consequences of venous outflow obstruction.[20]Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis (ATTRACT) trial, pharmacochemical catheter-directed thrombolysis plus standard therapy was compared with standard therapy alone for treatment of DVT.[21,22]

Prevention: Since May-Thurner Syndrome (MTS) increases risk of deep vein thrombosis (DVT) and complications associated with DVT, such as pulmonary embolism, prevention of these risks progressing to clinical events is prudent.In the absence of DVT and for patients with only mild symptoms of left leg swelling or pain, conservative measures of prevention are used, specifically, compression stockings. These are also used if the severity of MTS requires more aggressive invasive interventions. Venous ultrasound imaging is helpful in ruling out more severe manifestations of MTS, such as DVT.

In advanced MTS that demonstrates signs and symptoms of advanced chronic venous insufficiency, such as limb swelling, pain, and skin discoloration, prevention of disease progression aims to reduce stenosis of the vein(s) using angioplasty and stents in the affected segments(s). Angioplasty alone results in a high recurrence rate. Thereafter, compression stockings are used.In advanced MTS that results in venous thromboembolism (VTE), full anticoagulation

therapy is begun (unless contraindicated by pre-existing coagulopathy). Catheter-directed or pharmaceutical thrombolysis is useful in eliminating the clots that may migrate.[23]

Discussion

May–Thurner syndrome in the broader disease profile known as non-thrombotic iliac vein lesions (NIVLs) exists in the symptomatic ambulatory patient and these lesions are usually not seen by venography. Morphologically, intravascular ultrasound (IVUS) has emerged as the best current tool in the broader sense. If the patient has extensive thrombosis, it may be appropriate to consider pharmacologic and/or mechanical thrombectomy.

Conclusion

Thrombosis is ideally managed using a multidimensional approach consisting of routine catheter-directed thrombolysis, and physiotherapy and occupational therapy. Increasing awareness among primary care and emergency health care workers will ensure early recognition, timely thrombolysis, and prompt referral to a treatment options like thoracic or vascular surgeon. Future scientific research needs to high lighten on explaining the benefit of thrombolytic therapy in patients presenting delayed, identifying factors that predict ineffectiveness of thrombolysis and need for surgical intervention.

Ethical Clearance: This article is a purely a narrative review article hence it's not required an ethical clearance.

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