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Commentary

A Brief Review of May-Thurner Syndrome

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INTRODUCTION

Described in cadavers by two pathologists from the University of Innsbruck in 1957, May-Thurner Syndrome (MTS) is a condition in which venous outflow through the Left Common Iliac Vein (LCIV) is obstructed by compression of the LCIV, classically by the Right Common Iliac Artery (RCIA) as it courses over the spine. It is a relatively common entity, occurring in roughly one out of every five patients, though the majority of these patients are asymptomatic [1]. It occurs more frequently in women than men. Recognition of MTS is of clinical importance, as it is estimated to cause approximately 5% of all Deep Vein Thrombosis (DVT), and can lead to Venous Thromboembolism (VTE) and Pulmonary Embolism (PE), post-thrombotic syndrome, and other forms of morbidity [1].

PATHOPHYSIOLOGY

The core pathophysiologic mechanism is chronic compression of the LCIV. This compressive force not only obstructs blood flow directly, but also damages the venous endothelium, causing fibrosis and the formation of synechiae, web-like strings of fibrous tissue that span the venous lumen and further obstruct flow [2]. With venous outflow obstruction causing relative stasis of blood in the setting of chronic endothelial damage, two thirds of Virchow's triad are present, putting the patient at an increased risk of thrombosis. This risk only increases in patients in any kind of hypercoagulable state, completing the triad [3]. When flow limitation is severe enough to cause venous stasis distally in the limb, DVT can occur throughout the limb, not only in the iliocaval system. With or without thrombosis, this outflow obstruction in the iliocaval system can lead to venous hypertension in the lower extremity [1].

The classic cause of this compression is pressure from the RCIA, passing anteriorly to the LCIV, pinning it against the fifth lumbar vertebra. This configuration, with the RCIA as the sole source of compression, is referred to as primary MTS. Compression of the LCIV can also be caused by other anatomic structures, such as pelvic organs or masses, which can be referred to collectively as secondary MTS. Right-sided MTS, a syndrome analogous to MTS but occurring in the right common iliac vein, has also been reported [2,4].

PRESENTATION

Acutely, patients with MTS present with diffuse, unilateral lower extremity edema, often up to the hip/groin area, as well as pain and tenderness in the affected leg. Patients may also present with pleuritic chest pain, tachypnea and oxygen desaturation if a PE has occurred. Some patients may present with a chronic disease course, and are likely to have persistent leg edema and discomfort worse with standing, skin hyperpigmentation and venous ulceration [4,5].

DIAGNOSIS

As the presentation of MTS may mimic isolated DVT, a high index of suspicion is important in making the diagnosis. Though ultrasound can be helpful in detecting the occurrence of DVT in patients with MTS, it has a low sensitivity in the diagnosis of MTS itself and cross-sectional imaging like computed tomography or magnetic resonance venography is preferred to identify sources of extrinsic venous compression that define MTS. Though invasive, intravascular ultrasound is the most accurate means of diagnosing MTS, providing a real-time evaluation of the venous lumen sensitive to the sequelae of chronic compression [1,4,5].

MANAGEMENT

Patients with DVT should be anticoagulated according to the standard treatment algorithms [3].

The gold-standard, definitive of MTS treatment is catheter-directed thrombolysis and endovenous stenting of the affected CIV. Stenting is an important aspect of preserving long-term patency of the CIV [6]. Surgical thrombectomy is rarely performed if endovascular treatment is unsuccessful [1,7].

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CONCLUSION

May-Thurner syndrome is an important cause of acute and chronic morbidity that should be included in the differential diagnosis of a patient with lower extremity venous thromboembolism. Its pathophysiology hinges on the chronic compression of the left common iliac vein. Due to its variable and often subtle presentation, a high index of suspicion is required for its diagnosis, and cross-sectional imaging can be a helpful confirmatory test. The management of May-Thurner syndrome focuses on acute treatment of venous thromboembolism and stenting to prevent further vein compression.

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