



Treatment of a Patient with May-Thurner Syndrome and Iliofemoral Deep Vein Thrombosis by Pharmacomechanical Thrombolysis and Endovenous Stenting

Ahmet Unlu¹, Ahmet Baris Durukan^{1*} and Ali Cevat Tanalp²

¹Department of Cardiovascular Surgery, Medical Park Usak Hospital, Turkey

²Department of Cardiology, Medical Park Usak Hospital, Turkey

Abstract

May-Thurner syndrome is a rare condition that develops due to external compression of left main iliac vein by right main iliac artery. Patients present with swelling and pain symptoms due to venous stasis in the left lower extremity. Accompanying deep vein thrombosis may also be present. Although there are no specific diagnostic criteria, physical examination findings and imaging techniques are guiding. Endovenous stenting is mainly used in the treatment. Here we discussed a patient with May-Thurner syndrome accompanied by iliofemoral deep vein thrombosis who presented with pain and swelling in the left leg, treated with endovenous stenting simultaneous with pharmacomechanical thrombolysis.

Keywords: May-Thurner Syndrome; Deep venous thrombosis; Endovascular procedures

Introduction

May-Thurner syndrome (MTS), also known as iliac vein compression syndrome, is a rare pathology that results in development of iliac or iliofemoral vein thrombus due to compression of the left main iliac vein between the right main iliac artery and the vertebra. Although McMurrich implied that the underlying etiology was due to congenital adhesions originating from the main iliac vein, May and Thurner supported the hypothesis that mechanical compression and chronic pulsation of the right main iliac artery caused damage to venous wall, leading to spur-like structures in the lumen and finally intimal hyperplasia [1].

The diagnosis is important since it may cause recurrent deep venous thrombosis and postthrombotic syndrome. There is no current diagnostic criterion, so clinical and imaging findings should be evaluated together.

Strategies for thrombus removal for acute iliofemoral deep venous thrombosis provide a significant improvement in symptoms and a reduction in the severity and frequency of postthrombotic syndrome. Nowadays, endovascular techniques have eclipsed open surgical thrombectomy. Options for catheter-guided thrombus removal and ensuring continuity of iliofemoral venous flow include catheter directed thrombolysis, primary balloon angioplasty and stenting [1].

Here, we discussed a patient with MTS accompanied by iliofemoral deep vein thrombosis who presented with pain and swelling in the left leg, treated with endovenous stenting simultaneous with pharmacomechanical thrombolysis.

Case Presentation

A 19-year-old female patient presented with a 3-day history of pain and swelling in the left leg. Physical examination revealed a 4 cm difference in diameter in the left lower extremity compared to right and tenderness. Doppler ultrasound revealed iliofemoral deep vein thrombosis on the left side and iliac venous compression was suspected. Abdominal CT angiography revealed compression by right common iliac artery (Figure 1). The patient was hospitalized and taken to the catheter room. A temporary inferior vena cava filter was inserted. Following application of pharmacomechanical thrombolysis (Reya Thrombectomy System II, Biolas Health Inc, Ankara, Turkey) with recombinant human tissue type Plasminogen Activator (rtPA) to the left iliofemoral thrombosis via popliteal vein, a 14 mm Wallstent was placed in the left common iliac vein (Figure 2). The cava filter was removed 1 day after the procedure. The patient was discharged on the second postoperative day

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*Correspondence:

Ahmet Baris Durukan, Department of Cardiovascular Surgery, Medical Park Usak Hospital, Usak, Turkey, Tel: 905322273814; Fax: 902762272233; E-mail: barisdurukan@yahoo.com

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Figure 1: Left main iliac venous compression between right main iliac artery and vertebrae.

under anticoagulant treatment without any complication. At the 6th month follow-up, the patient had no complaints and the lower extremity diameter difference had completely disappeared.

Discussion and Conclusion

May-Thurner Syndrome often occurs in young and middle-aged women with chronic venous insufficiency and is found in 18% to 49% of cases of left lower extremity deep vein thrombosis. It should be considered when there are symptoms associated with chronic venous hypertension, such as lower extremity deep vein thrombosis history, varicosities, venous ulcers, swelling of the lower extremity and pain [2].

Since Doppler ultrasound is noninvasive, it is the first preferred imaging modality. However, failure to review iliac venous segments may cause MTS to be overlooked in symptomatic patients. Success depends on the experience and size of the patient. Iliac compression can be detected by CT venography and MR venography. Tomography is useful in the diagnosis and elimination of other causes of lower extremity swelling. The three most common causes imitating MTS are lymphadenopathy associated with underlying malignancy, venous obstruction due to hematoma or cellulitis. In this case we presented a careful operator suspected iliac venous compression that directed us to perform CT. Venous collateral flow and intravascular thickening can be detected by MR venography. However, MR venography is expensive and cannot detect non-laminar flow in the bifurcation. Therefore, it may be inadequate for the diagnosis. The gold standard for the diagnosis of MTS is conventional venography with intravascular ultrasonography. Specific measurements of the lumen area and diameters with can be obtained without requiring contrast and lateral projection imaging, thus allowing the selection of the most appropriate stent for the patient [3].

Treatment options vary depending on whether or not deep venous thrombosis is present. Patients presenting with deep venous thrombosis can be treated with anticoagulants, catheter directed thrombolysis, surgical reconstruction or stent implantation. Especially in patients with iliac vein compression syndrome, endovenous stent implantation can be performed as an alternative to surgery, which is more practical, comfortable and successful option to reduce symptoms. Literature data suggest that stent implantation is recommended in the treatment of venous stenosis and occlusion regardless of deep venous thrombosis [4]. We also preferred to place a wall stent following pharmacomechanical thrombolysis.

Stent placement in a patient with thrombotic MTS was first



Figure 2: Patent iliac venous flow following thrombectomy and wall stent in place.

reported by Berger et al. in 1995. Since then, many studies have shown its effectiveness. Mewissen and his team showed that one third of patients treated with thrombolysis due to iliofemoral deep venous thrombosis required stenting and patients with stents had significantly higher iliac venous patency than those without stents. As a result of these studies, the Society of Interventional Radiology and the Society of Vascular Surgery recommends the use of iliac venous stents in external iliac vein compression [3].

In a study of 36 patients by Titus and his team, endovenous stents were placed in all patients and primary and secondary patency rates were reported as 78% and 95% at 2-year follow-up. Hartung et al. reported cumulative primary and secondary patency rates as 73% and 90% at 36-month follow-up. A cumulative primary patency rate of 82% at 22 weeks of follow-up was reported by Husmann et al. In 37 patients with acute generalized venous thrombi affecting the ilio caval segment, catheter directed thrombolysis was performed by Kobel and his team. In the 16-month follow-up of the patients who underwent stent placement after angioplasty, the primary patency was reported as 77% and secondary patency was 89%. Neglen et al. in their comprehensive series of endovenous stent implantation, reported significantly higher stent patency rates in patients with post-thrombotic etiology than in patients with primary nonthrombotic iliac vein lesions [1]. In the light of all literature data, the long-term results of endovascular treatment in MTS revealed high technical success and good long-term patency. In parallel with the literature data, we provided the continuation of venous flow with pharmacomechanical thrombolysis in the patient with acute iliofemoral deep venous thrombosis to decrease the thrombus burden and to achieve improvement in symptoms. In the long term, we applied endovenous stent implantation to ensure patency.

In conclusion, MTS also known as iliac vein compression syndrome, is a pathology that comes with venous hypertension findings in the left lower extremity and requires early treatment. Thrombus reduction therapies are recommended in patients with severe symptomatic deep venous thrombosis findings. Endovascular treatment options should be considered to help preventing early re-thrombosis and postthrombotic syndrome following intervention.

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