Endovascular Repair of an Abdominal Aortic Aneurysm with Iliac Vein Compression Syndrome

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An 84-year-old man with chronic obstructive pulmonary disease (COPD) was referred to our institution for further treatment of severe swelling of the left lower extremity. The left iliac vein was compressed by the abdominal aortic aneurysm and a right common iliac arterial aneurysm measuring 62 mm and 45 mm in diameter and was partially thrombosed. Multiple pulmonary artery embolisms were also noted. Endovascular repair of the abdominal aortic aneurysm and the right common iliac arterial aneurysm was performed because of his respiratory dysfunction. The left leg edema gradually resolved after endovascular treatment. Six months after the treatment, computed tomography (CT) demonstrated resolution of the venous thrombus of the left lower extremity. Although open surgery is reliable treatment for iliac compression syndrome, endovascular treatment might be a feasible and an adequate therapeutic option for patients who have severe comorbidities, complications, or high frailties.

Keywords: endovascular aneurysmal repair, abdominal aortic aneurysm, iliac vein compression syndrome

Introduction

Iliac vein compression syndrome is a result of left common iliac vein compression between the right common iliac artery and the overlaying spine. Although this syndrome is typically characterized by normal iliac artery compression without aneurysmal formation, an abdominal aortic or iliac arterial aneurysm can also lead to the same result. We herein describe a patient with iliac vein compression syndrome successfully treated by endovascular therapy of the abdominal aortic aneurysm. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Case Report

An 84-year-old man was referred to our institution for further treatment of severe swelling of the left lower extremity. He had been previously treated for chronic obstructive pulmonary disease (COPD). Computed tomography (CT) showed an infra-renal abdominal aortic aneurysm and a right common iliac arterial aneurysm, measuring 62 mm and 45 mm in diameter, respectively (Fig. 1a). The left iliac vein was compressed by the abdominal aortic aneurysm and was partially thrombosed (Fig. 1b). Multiple pulmonary artery thrombus was also noted (Fig. 1c). Anticoagulation...
therapy consisting of heparin and apixaban was started soon after admission. Prosthetic graft replacement of the aneurysm via a laparotomy was considered ideal to directly decompress the thrombosed iliac vein. However, endovascular repair of the aneurysms was planned because of his respiratory dysfunction (forced expiratory volume \( \text{FEV}_1 \) 1.0 1.14 L/sec \( \text{FEV}_1 \)% 42.9%). Therefore, endovascular repair (Gore Excluder, W.L. Gore & Associates, Inc, Flagstaff, Arizona, USA) of the abdominal aortic aneurysm and the right common iliac arterial aneurysm was performed electively. Endovascular aneurysm repair (EVAR) was expected to treat not only the aneurysms, but also the iliac vein compression syndrome. Coil embolization of the right internal iliac artery was performed simultaneously. The patient was well during the postoperative period and no significant complication was noted. The left leg edema gradually resolved after endovascular treatment. One year after the treatment, CT demonstrated resolution of the venous thrombus of the left lower extremity (Fig. 2). Furthermore, no pulmonary artery thrombus was detected. The patient is currently doing well 14 months after the operation.

**Discussion**

Iliac vein compression syndrome is characterized by the compression of the left common iliac vein between the right common iliac artery and the overlying spine, with subsequent development of deep venous thrombosis (DVT) in the left lower extremity.\(^1\) This phenomenon is also known as the May–Thurner syndrome.\(^2,3\) The combination of chronic mechanical compression and pulsatile vibratory pressure from the artery causes chronic repetitive micro trauma. This leads to endothelial injury of the vein that may predispose one to DVT due to specific morphologic changes.\(^4\)

Several treatment options for iliac vein compression syndrome have been described in the literature. These include anticoagulation therapy, open surgery, and endovascular therapy. Recently, with the advance of the endovascular technique, an endovascular venous stent placement in combination with anticoagulation therapy is considered first-line. Butros et al.\(^4\) reported that there have been some cases successfully treated by a self-expanding venous stent following thrombolysis. The cumulative patency of venous stents
Conclusion

Iliac compression syndrome caused by abdominal aortic aneurysm is a very rare clinical entity. Although open surgery is reliable treatment, EVAR might be a feasible and an adequate therapeutic option for patients who have severe comorbidities, complications, or high frailties.

Disclosure Statement

All authors have no conflicts of interest.

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