Case report - Aortic and aneurysmal Brown-Sequard syndrome after thoracic endovascular aortic repair

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Received 24 August 2009; received in revised form 28 September 2009; accepted 30 September 2009

Abstract

A 76-year-old female had suffered from distal arch aortic aneurysm and chronic DeBakey IIIB type dissecting aneurysm. The patient underwent thoracic endovascular aortic repair (TEVAR). After TEVAR the patient had a motor and proprioceptive loss on the left side and a pain and body temperature loss on the right side below the level of T7. At diagnosis of Brown-Sequard syndrome, corticosteroid and free radical scavenger were administered soon afterwards. Her neurological deficits gradually improved and the patient was discharged with the aid of a walking stick three months after TEVAR.

Keywords: Brown-Sequard syndrome; TEVAR

1. Introduction

Brown-Sequard syndrome is one of clinical syndromes associated with spinal cord injury [1] and is extremely rare with endovascular stenting aortic repair. To our knowledge, this is the first case of Brown-Sequard syndrome occurring after thoracic endovascular aortic repair (TEVAR).

2. Case report

A 76-year-old female with a distal arch aortic aneurysm had developed thrombosed DeBakey IIIB aortic dissection one year previously. Due to enlargement of the distal arch aneurysm (Fig. 1) the patient underwent TEVAR with consideration of her low activity. Stent grafts with two fenestrations for the brachiocephalic and left common carotid arteries were placed from the ascending to the descending thoracic aorta at landing zone were 32 mm and 28 mm, respectively. The left subclavian artery was occluded with coils. After the procedure the patient returned to the intensive care unit and her hemodynamic state was stable. After wakening, the patient presented with left hemiplegia and fixed purple discoloration of the skin with good pulses only in the left toes. Neurologic examination demonstrated a motor and proprioceptive loss on the left side and a pain and body temperature loss on the right side below the level of T7, which were diagnostic of Brown-Sequard syndrome. Peripheral embolization associated with TEVAR was responsible for purple patches in the toes on the left side. Her arterial blood pressure was kept in 150–180 mmHg in systole and her oxygen saturation was in 100% with an oxygen mask.

3. Discussion

Endovascular surgery for aortic aneurysms has now developed and has been applied to the abdominal, descending, and distal arch of the aorta. Recently, TEVAR has been one of the major treatments for thoracic aortic aneurysms, particularly in high-risk patients and the effectiveness and less invasiveness is now well recognized. However, major complications are encountered in 8–25% of cases, which include mortality, cerebrovascular accidents, vascular injury, embolization, and spinal cord ischemia [2]. Spinal cord injury after TEVAR has been reported with incidence of 3.6–12% [3], which usually presents paraplegia or paraparesis. Risk factors for spinal cord ischemia include extensive coverage of the aorta, injury to iliofemoral vessels, sacrifice of the left subclavian artery, systemic atheroembolism, and simultaneous or previous abdominal aortic aneurysm repair [3, 4]. In this patient preoperative magnetic reso-
Fig. 1. Preoperative computed tomographic scan showed the enlarged distal arch aortic aneurysm (60 mm in diameter) and DeBakey IIIb dissecting aorta.

Fig. 2. Postoperative computed tomographic scan showed extensive coverage of the thoracic aorta by stenting.

The pathophysiology of Brown-Sequard syndrome is damage or loss of the lateral half of the spinal cord. The most common cause is traumatic injury, otherwise including tumors, multiple sclerosis, disk herniation, epidural hematoma, and viral myelitis [5]. The same mechanism as peripheral microembolization to the left toes associated with TEVAR procedure might act on the occurrence of Brown-Sequard syndrome in the present patient. Diagnosis of Brown-Sequard syndrome is based on physical examination findings of ipsilateral motor and proprioceptive loss and contralateral pain and body temperature loss. Brown-Sequard syndrome occurs most often following cervical injuries and less frequently in the thoracic cord. Typical clinical presentation of Brown-Sequard syndrome is seen in only a few cases and hybrid combinations of Brown-Sequard and other incomplete spinal cord injury syndrome may usually occur [5]. Prognosis for significant motor recovery in Brown-Sequard syndrome is good and one-half to two-thirds of the one year motor recovery occurs within the first 1–2 months following injury [6]. Initial severity of the impairment is the best predictor of functional recovery [1]. Although magnetic resonance imaging was not performed at onset because of emergency basis, this patient had typical manifestation of Brown-Sequard syndrome. No other spinal cord ischemic syndromes combined may be associated with her relative short-term recovery.

References