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Successful treatment of a patient with Takayasu's arteritis presenting as subclavian steal syndrome secondary to bilateral occlusion of subclavian arteries: A case report

Bilateral subklavian arter tıkanıklığına subklavian çalma sendromunun eşlik ettiği Takayasu arteritli hastanın başarılı tedavisi: Olgu sunumu

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Abstract

Takayasu's arteritis (TA) is a chronic vasculitis of unknown etiology, characterized by granulomatous inflammation of large-sized arteries. It usually involves aortic arch and its branches. It is controversial but percutaneous transluminal angioplasty (PTA) is preferred for non-active stenosis and occlusion of artery and aorta. We presented a patient who was in remission period with subclavian steal syndrome treated with bilateral endovascular intervention.

Keywords: Takayasu's arteritis, Subclavian steal syndrome, Percutaneous transluminal angioplasty

Öz

Takayasu arteriti (TA), büyük boyutlu arterlerde granülomatöz inflamasyon ile karakterize etiyolojisi bilinmeyen kronik bir vaskülittir. Genellikle arkus aorta ve dallarını tutar. Tartışmalı olmasına rağmen hastalığın aktif olmayan evresinde aort ve dallarının tıkanıklığı için perkütan translüminal anjiyoplasti (PTA) tercih edilmektedir. Bizde bu yazımızda remisyon periyodundaki bilateral endovasküler girişimle tedavi edilen subklavian çalma sendromlu bir olguyu sunduk.

Anahtar kelimeler: Takayasu's arteriti, Subklavian steal sendromu, Perkütan transluminal anjioplasti

Introduction

Takayasu's arteritis (TA) is a vasculitis of unknown etiology, characterized by inflammation of middle- and large-sized arteries, especially the aorta and its branches [1]. Ascending aorta, thoracic descending aorta, pulmonary arteries, abdominal aorta and its branches, and large arteries of the extremities can be affected, in addition to the involvement of aortic arch and its branches. The segmental stenosis, occlusion, dilatation and/or aneurysm of the vessels can be developed due to the inflammation of the vessel wall. As the disease progress, symptoms vary depending on the localization of the involvement. It can be hard to reach a diagnosis and delays in diagnosis can be seen in the early course of disease due to the non-specific symptoms such as fatigue, fever, weight loss. The claudication and neurological symptoms can be seen due to the extremity arterial and cranial arterial system involvement, respectively [1]. If the occlusion is proximal to the subclavian artery, the distal part of the subclavian artery is supplied by the vertebral artery and the perfusion of the brain may be compromised which is also called as subclavian steal syndrome. Subclavian steal syndrome is characterized by dizziness, headache and neck pain during exercise. Corticosteroids and immunosuppressive agents play a key role in the treatment of disease. Endovascular stenting, angioplasty, and by-pass surgery may be performed in case of severe stenosis or total occlusion of the artery [2]. We present a patient with TA who had a history of cerebrovascular disease, weakness of arms with exertion, headache and neck pain. We performed peripheral angiography in the diagnosis of suspected bilateral subclavian artery stenosis and performed stent placement for the bilateral subclavian artery.

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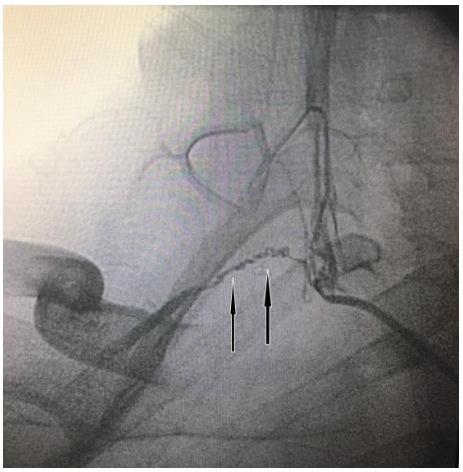

Figure 1: Angiogram revealed a 99% stenosis in the right subclavian artery

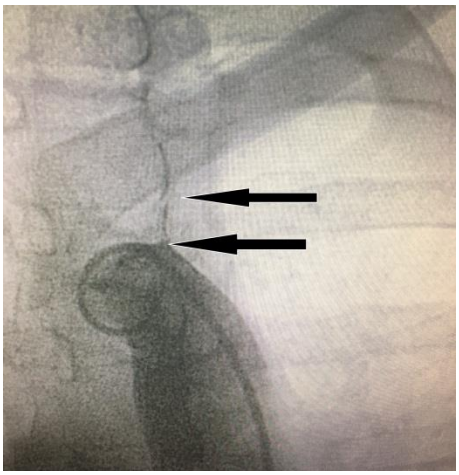

Figure 2: Angiogram revealed total occlusion of the left subclavian artery

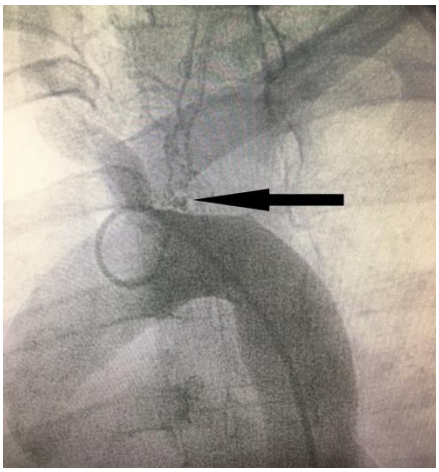

Figure 3: Subtotal occlusion of the left common carotid artery

Case presentation

A 22-year-old patient diagnosed with TA and cerebrovascular disease presented to the rheumatology department with bilateral arm pain which was increased by exertion and relieved by rest within 2-3 minutes. Upon questioning, she stated that a headache and neck pain and dizziness had recently worsened during daily activities such as cooking, sweeping which were relieved by rest. The physical examination revealed weak bilateral radial pulses. The heart rate was 84/min, her blood pressure was 74/42 mmHg in the right arm, and 78/45 mmHg in the left arm. Bilateral pedal pulses were normal, and the blood pressure was 128/82 mmHg in the right leg, and the blood pressure was 132/84 mmHg in the left leg. Her electrocardiogram showed normal sinus rhythm. Her echocardiogram was within normal limits. Along with these findings, we considered the possibility of subclavian steal syndrome and ordered computed tomography angiography (CTA). CTA revealed severe stenosis of bilateral subclavian arteries and diagnostic conventional peripheral angiography was performed. Angiogram revealed a 99% stenosis in the right subclavian artery (Figure 1), total occlusion of the left subclavian artery (Figure 2), and subtotal occlusion of the left common carotid artery (Figure 3).

The percutaneous transluminal angioplasty was decided to revascularize the right and left subclavian arteries. Bare metal stents were deployed into the right and left subclavian arteries (Figure 4, 5). The blood pressure in the left arm increased to 128/75 mmHg after stent implantation and became palpable. Dual antiplatelet (aspirin+clopidogrel) was added to her medications for TA and was discharged. Only clopidogrel treatment was continued at the end of the first month. Control subclavian angiography was performed six months later and it was found that stent implanted to left subclavian artery was patent and there was 30% restenosis in the right subclavian artery (Figure 6, 7). Since the patient was asymptomatic, medical therapy (clopidogrel + corticosteroids and immunosuppressive agents) was continued. The patient gave her informed consent for anonymous use of her personal data for scientific purposes.

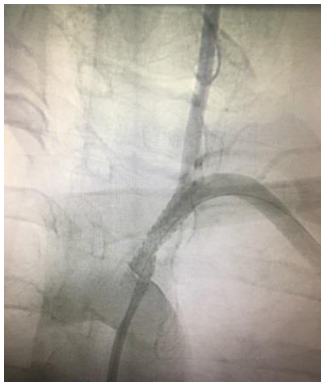

Figure 4: View of stent implanted to left subclavian artery

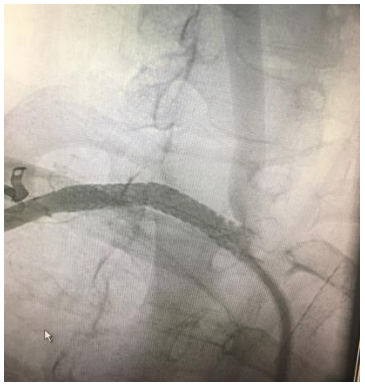

Figure 5: View of stent implanted to right subclavian artery

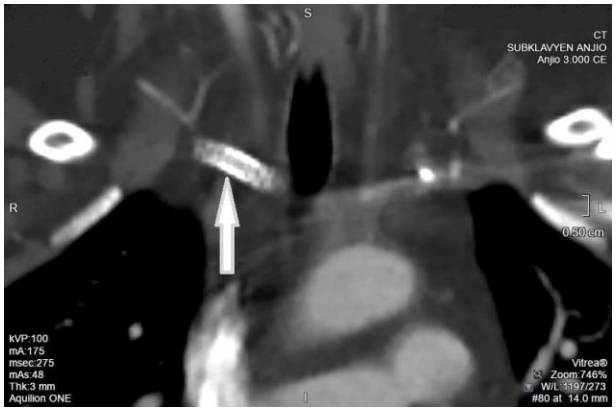

Figure 6: View of control computed tomography angiography for right subclavian artery

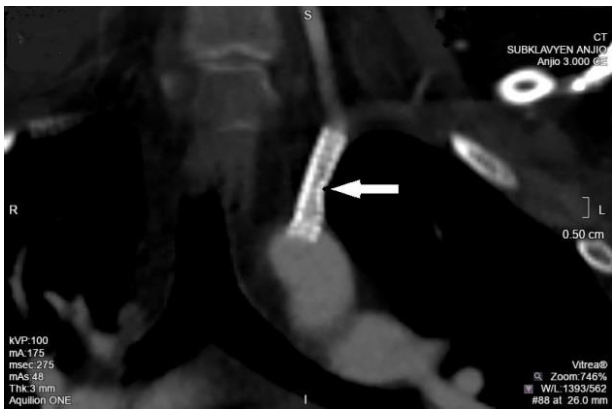

Figure 7: View of control computed tomography angiography for left subclavian artery

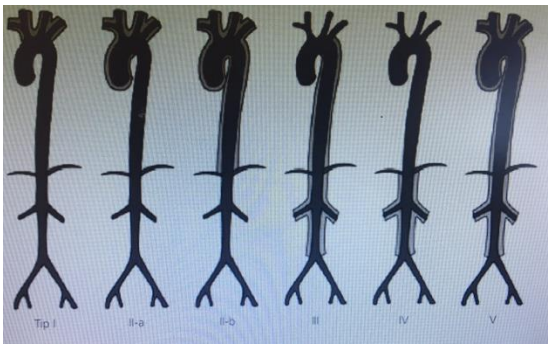

Figure 8: The angiographic classification of Takayasu's arteritis

Discussion

Takayasu's arteritis (TA) is a chronic vasculitis of unknown etiology, characterized by granulomatous inflammation of large-sized arteries. It usually involves aortic arch and its branches. Furthermore, ascending aorta, thoracic descending aorta, pulmonary arteries, abdominal aorta and its branches, and large arteries of the extremities can be affected. The segmental stenosis, occlusion, dilatation and/or aneurysm of the vessels can be developed due to the inflammation of the vessel wall [3]. The conventional angiogram remains an important tool for diagnosis and treatment. TA can be divided into different types based on the extensiveness of the disease. There are several classifications for TA. The classification made by Hata et al. [4] in 1994 is generally used for his purpose. According to this classification, patients are divided into five groups. In type I, aortic arch and its branches are compromised. In type IIa, ascending aorta is compromised in addition to the aortic arch and its branches. In type IIb, thoracic aorta involvement is seen. In type III, thoracic aorta, abdominal aorta, and renal arteries are compromised. In type IV, only abdominal and renal arteries are compromised. Type V is roughly equal to the sum of type IIb and type IV. In other words, aortic arch and its branches, ascending aorta, thoracic aorta, and renal arteries are compromised. The angiographic classification of TA is showed in Figure 8. The most common type is type V followed by type I in our country [5]. Our case met the criteria of type I.

Revascularisation is recommended in patients with upper extremity arterial disease, which is symptomatic in the European guidelines for the diagnosis and treatment of peripheral arterial disease. In symptomatic patients with a stenotic / occluded subclavian artery, both revascularization options (stenting or surgery) should be considered and discussed case by case according to the lesion characteristics and patient's risk [6]. On account of the current development of the endovascular therapy, percutaneous transluminal angioplasty (PTA) is preferred for non-active stenosis and occlusion of artery and aorta [7]. Even though patency of the surgical revascularization is better, endovascular therapy is preferred [8].

In our case, we preferred percutaneous transluminal angioplasty considering the patient and lesion characteristics. We performed stent implantation after balloon angioplasty because of insufficient opening after balloon angioplasty and lack of distal flow. However, considering the inflammatory process in inflammatory diseases, only ballooning may be more appropriate.

In Asian countries, PTA is being performed successfully in treatment of carotid, renal and subclavian artery disease. PTA is indicated in patients with claudication, distal organ ischemia, discrete lesions and significant stenosis. The intervention must be performed in remission period. Min PK et al. [9] showed that endovascular intervention was safe and effective only in remission period at which the disease was under controlled by immunsuppressive agents, in their case series. We presented a patient who was in remission period with subclavian steal syndrome treated with bilateral endovascular intervention. The result was satisfying but we should keep in mind that the long-term outcome of PTA in the setting of TA remains controversial. Maksimowicz-McKinnon et al. [10] showed that 78% of cases developed stenosis although interventions were successful.

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