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Case Report / Olgu Sunumu

Hybrid treatment of type B aortic dissection with retrograde extension in a patient with anomalous aortic arch

Aort ark anomalisi olan bir hastada retrograd uzanımın eşlik ettiği tip B aort diseksiyonunun hibrid tedavisi

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ABSTRACT

Hybrid treatment of aortic arch encompasses a combination of endovascular stenting with surgical revascularization of supra-aortic branches. Herein, we report a 53-year-old male case of type B aortic dissection with retrograde extension and anomalous aortic arch. The patient was successfully treated by hybrid treatment using bilateral carotico-subclavian bypass grafting and endovascular stent grafting.

Keywords: Anomalous aortic arch; aortic dissection; endovascular stent grafting; hybrid treatment.

ÖZ

Aort arkın hibrid tedavisi, supraaortik dalların cerrahi revaskülarizasyonu ile birlikte endovasküler stentlemeyi kapsar. Bu yazıda, retrograd uzanım ve aort ark anomalisinin eşlik ettiği tip B aort diseksiyonlu 53 yaşında bir erkek olgu sunuldu. Hasta iki taraflı karotikosubklavyen baypas greftleme ve endovasküler stent greftleme yapılarak hibrid tedavi ile başarılı bir şekilde tedavi edildi.

Anahtar sözcükler: Aort ark anomalisi; aort diseksiyonu; endovasküler stent greftleme; hibrid tedavi.

Aortic arch anomalies are rare congenital vascular anomalies. The most common arch anomalies are double aortic arch and right-sided aortic arch.[1,2] Right aortic arch anomaly is an uncommon anatomical anomaly which can occur less than 0.1% in the overall population, and in half of these cases, the subclavian artery anomalies can be seen.[2] Aortic dissection is the most common acute aortic syndrome in the aortic arch anomalies with more than 20 cases per million per year, which requires the urgent surgical operation.[3,4] Medical treatment can be preferred in uncomplicated acute type B aortic dissection rather than surgical management due to uncontrollable pain, visceral ischemia, malperfusion, and risk for rupture, while complicated acute type B is a still clinically challenging condition.[5,6] Location, extension, and early diagnosis of the dissection affect the prognosis and the treatment.[4,6,7] The mortality rate among patients undergoing surgical repair of dissection is about 35%.[7] One of the most commonly used techniques for type B dissections with anomalous aortic arch is hybrid treatment in selected patients, as it is comfortable for the surgeon, and the morbidity and mortality rates are lower than surgery.[5,6,8] In this article, we report a case of type B aortic dissection with retrograde extension and anomalous aortic arch which was successfully treated by hybrid treatment using bilateral carotico-subclavian bypass grafting and endovascular stent grafting.

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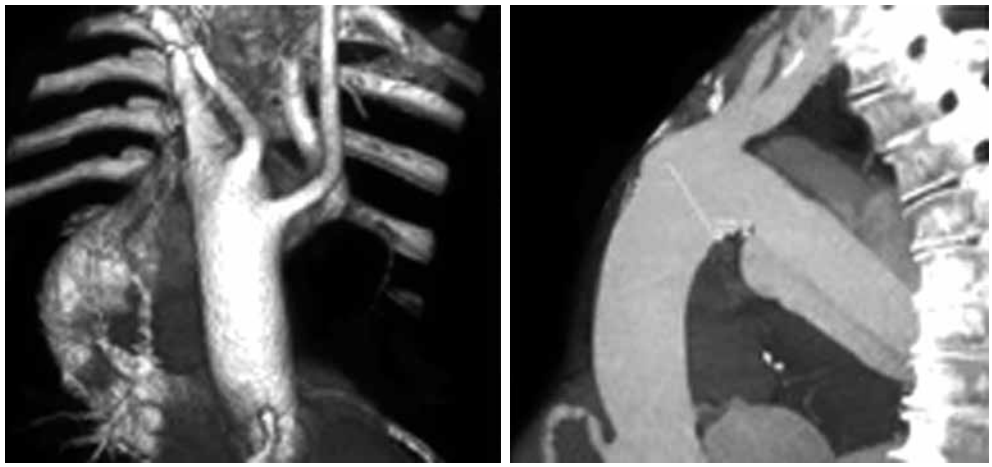

Figure 1. A preoperative image of dissection and anomalous aortic arch.

CASE REPORT

A 53-year-old male patient, with a past history of hypertension, was admitted to the emergency department for the first time with sudden-onset of chest pain. Echocardiographic examination and laboratory analysis showed no signs of acute coronary syndrome. Computed tomography angiography (CTA) revealed type B aortic dissection with retrograde extension and anomalous aortic arch (Figure 1). His first aortic arch branch was left common carotid artery (LCCA). The following branches were right common carotid artery (RCCA), right subclavian artery (RSCA), and left subclavian artery (LSCA). The dissection was extending through the last two distal branches of the aortic arch (RSCA and LSCA). Based on a multidisciplinary review, hybrid treatment was deemed appropriate for this patient. A written informed consent was obtained from the patient. The first stage of surgery consisted of bilateral carotico-subclavian bypass using a 6 mm graft. In the second stage, a 38 mm to 20 cm thoracic stent was implanted via the right femoral access.

Control CTA revealed intact supraaortic bypasses and no extravasation from the thoracic aorta (Figure 2). The postoperative course was uneventful. The patient was discharged on postoperative Day 7. Acetylsalicylic acid (100 mg) and metoprolol (50 mg) were used in the treatment.

DISCUSSION

Hybrid treatment of aortic pathologies encompasses the combination of traditional open surgery and endovascular intervention. This procedure is reliable with low mortality rates (0 to 2%), low

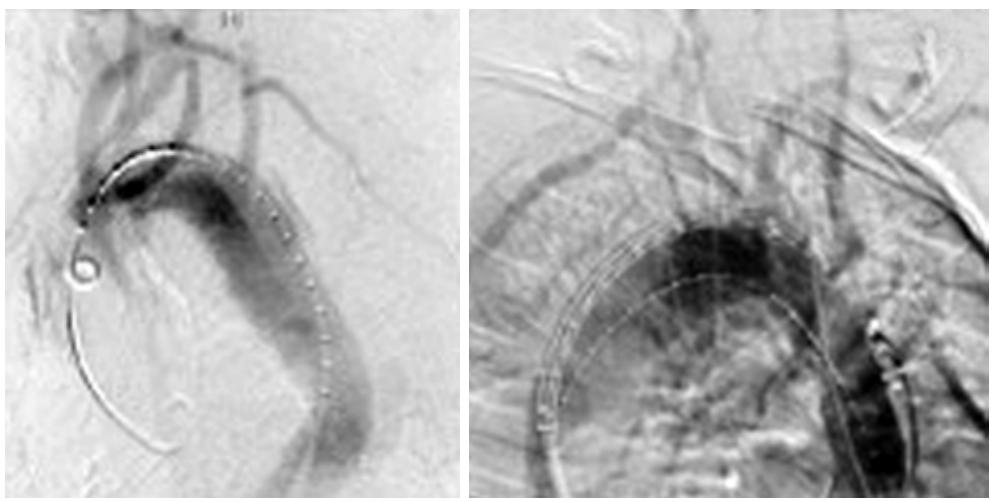

Figure 2. A postoperative image of control angiography.

morbidity, and shorter intensive care unit and hospital stays.[9] In addition, hybrid treatment reduces mortality and morbidity in patients with complex aortic pathologies.[10] Furthermore, this technique may be more beneficial in the elderly with significant comorbidities and in those who may not tolerate prolonged cross-clamping and hypothermic circulatory arrest.[10] Also, complications of endovascular procedures, such as retrograde migration of the aortic stent, can be corrected during hybrid procedure synchronously.[11] However, hybrid treatment may not be suitable for all patients. The main disadvantages of this treatment include longer operation time and possible endoleaks which may require a re-do intervention.[9] Also, operating rooms of hybrid treatment are not available in all facilities, and many cardiovascular surgeons have limited experience on endovascular procedures.[11] In our case with anomalous aortic arch, we treated type B aortic dissection with retrograde extension with hybrid treatment. Based on our experience, definite diagnosis is one of the major challenges in such cases. Therefore, we recommend examining CTA images carefully and precisely for each patient before planning of a hybrid aortic procedure.

In conclusion, hybrid treatment, based on a proper preoperative computed tomography angiography imaging, can offer the most successful outcome for an individual patient, preventing potential neuroembolic events and perioperative complications.[12] We suggest that hybrid repair represents a practical option for the treatment of complex aortic arch pathologies.

Declaration of conflicting interests

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