

## Should We Operate Unconscious Patients with Acute Aortic Dissection?: Case Report

### Bilinç Kaybı Gelişen Akut Aort Diseksiyonunda Cerrahi Tedavi Uygulamalı mıyız?

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**ABSTRACT** Survival after acute aortic dissection (AAD) with cerebral malperfusion is a rare condition. We report a case that underwent emergent surgery and survived. A 50-year-old man with history of hypertension was brought to emergency room of a medical center with right hemiplegia and unconsciousness. The patient was transferred to our center 8 hours after the onset of neurological condition. The bedside echocardiography showed AAD with severe aortic insufficiency. Urgent cerebral diffusion magnetic resonance imaging (MRI) was performed to evaluate the cerebral ischemia and revealed focal ischemic regions. The patient underwent emergent cardiac surgery. Aortic incision was made and total transection of the ascending aorta was observed. Aortic valve was tri-leaflet but prolapsing freely into the left ventricle causing severe aortic insufficiency. Suspension of aortic valve and replacing the ascending aorta with tube graft under total circulatory arrest were performed. The procedure and postoperative course was uneventful. The optimal treatment of unconscious patients with AAD has still been controversial. Authors reported exclusion criteria of urgent aortic surgeries. However, there are reports implicating recovery after surgery that was performed more than 6 hours of onset of neurological condition. We think that, unconscious patients with AAD can undergo surgical treatment unless there is no sign of global cerebral ischemia on MRI.

**Key Words:** Dissection; aorta, thoracic; hypoxia-ischemia, brain; survival

**ÖZET** Serebral malperfüzyonla seyreden akut aort diseksiyonu (AAD) sonrası sağ kalım nadir görülen bir durumdur. Bu raporda, acil cerrahi tedavi uygulanan bu tür bir olgu sunulmaktadır. Hipertansiyon öyküsü olan 50 yaşında erkek hasta bilinç kaybı ve sağ hemipleji nedeni ile ambulans ile acil servise getirildi. Hastanın yakınlarından tablonun 8 saat önce ortaya çıktığı öğrenildi. Ekokardiyografide AAD ve ileri aort yetersizliği, serebral difüzyon MRI'da fokal serebral iskemi rapor edildi. Hastaya acil cerrahi tedavi uygulandı. Asendan aortada total transeksiyon olduğu gözlemlendi. Aort kapak suspansiyonu ve asendan aorta replasmanı uygulandı. Peroperatif dönemde herhangi bir sorun gözlenmedi. Bilinç kaybı gelişen AAD olgularında optimal tedavi tartışmalıdır. Cerrahi tedavi konusunda henüz tam bir fikir birliği oluşmamışsa da, tablonun ortaya çıkmasından 6 saat veya daha uzun süre sonra uygulanan cerrahi tedavi sonrası iyileşme olduğunu belirten raporlar mevcuttur. Biz bilinç kaybı gelişen AAD olgularında MRI'da global serebral iskemi gözlenmediği takdirde cerrahi tedavi uygulanabileceğini düşünmekteyiz.

**Anahtar Kelimeler:** Diseksiyon; aort, torasik; hipoksi-iskemi, beyin; sağkalım

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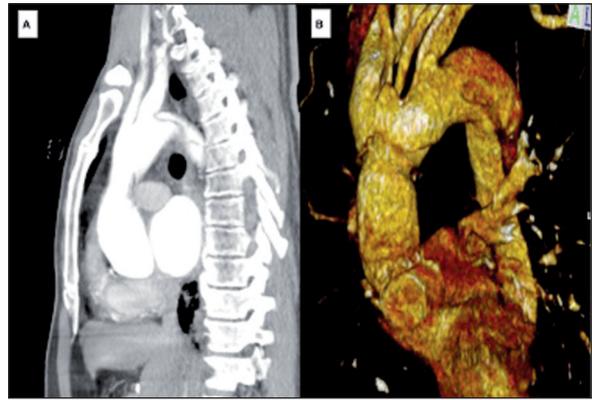
**A**ortic dissection is a catastrophic event especially in the acute form. Survival after acute aortic dissection with cerebral malperfusion is a rare condition. Optimal treatment for acute type A aortic dissec-

tion with cerebral malperfusion is still controversial. The published world literature regarding this condition is composed of only a few case reports. Herein, we report a case of acute aortic dissection with cerebral malperfusion that underwent emergent surgery and survived.

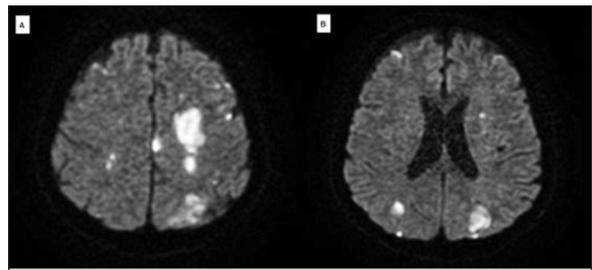
## CASE REPORT

A 50-year-old man with a history of uncontrolled hypertension due to non-compliance to the medication was brought to the emergency room. Previously, he had presented to another center with a sudden onset of back and chest pain. Soon after, loss of consciousness was observed, following right hemiplegia. After resuscitation, he was transferred to our center for further treatment with the preliminary diagnosis of stroke. The patient was admitted to our center approximately 8 hours after the onset of neurological condition. His initial physical examination revealed cerebrovascular accident with right hemiplegia (no response to painful stimulus on right limbs) and hypertension (arterial blood pressure: 190/90 mmHg). Further examinations revealed pulmonary edema. Unfortunately, within one hour of admission, his hemodynamic status became unstable (arterial blood pressure 50/30 mmHg) and the patient required positive inotropic support. With suspicion of thoracic aortic dissection, urgent bedside echocardiography was performed, and acute ascending aortic dissection was diagnosed. The intima of the vessel was transected causing prolapsus of aortic valve into the left ventricle which resulted in severe aortic insufficiency. Urgent computerized tomography of the chest was performed, and it revealed acute De-Bakey Type I aortic dissection (Figure 1-A). To evaluate cerebral ischemia, cerebral diffusion magnetic resonance imaging (MRI) was performed, and focal ischemic regions rather than global ischemia were observed (Figure 2).

The patient underwent emergent cardiac surgery. Standard median sternotomy was performed. Hemopericardium was not observed. Cardiopulmonary bypass was established with arterial and venous cannulation via right subclavian artery and right atrium, respectively. Aorta was opened via transverse aortotomy. Aortic valve was observed as



**FIGURE 1:** A. Preoperative computerized tomography (CT) revealing aortic dissection. B. Postoperative reconstructed CT image of replaced ascending aorta. Proximal and distal sewing lines of Dacron tube graft are seen.



**FIGURE 2:** Bilateral multiple focal ischemic regions, dominantly at the left subcortical area. Clinical finding is probable right hemiparesis localized to left side, with painful stimuli.

tri-leaflet, but it was prolapsing into the left ventricle, causing severe aortic regurgitation. Aortic valve was suspended. Ascending aorta was replaced with a Dacron tube graft, under total circulatory arrest (TSA) (Figure 1-B). Selective antegrade cerebral perfusion was established and maintained during TSA. The procedure was completed without any complications. Postoperative course was satisfactory. The patient did well and discharged 9 days after the surgery. During follow-up period, he required physical rehabilitation, and he had it. Currently, he is well except slight weakness of his right upper and lower limbs.

## DISCUSSION

Acute aortic dissection is the most common life-threatening aortic disorder.<sup>1</sup> Its incidence is estimated as 5 to 30 per 1 million people per year in the United States.<sup>1,2</sup> The mortality rate within first several hours is 1% per hour.<sup>3</sup> Therefore, early and ac-

curate diagnosis and management are life-saving steps, as observed in the case presented here. Acute aortic dissection may mimic some other common disorders and may be fatal within hours.<sup>2</sup> It is less common than other conditions with similar signs and symptoms. This indicates that suspicion is the most significant point. Severe, sharp or 'tearing' back pain is typical symptom of acute aortic dissection distal to the left subclavian artery, while anterior chest pain is typical in ascending aortic dissection. Although painless dissection has been reported,<sup>3</sup> it is relatively rare. Aortic dissections are evaluated according to De-Bakey classification (type I, II and III) or Stanford classification (type A and B). Systemic hypertension was reported as the most important predisposing factor for acute aortic dissection.<sup>1</sup> Other predisposing factors include disorders of collagen, genetically triggered thoracic aortic diseases and congenital disorders, atherosclerosis, blunt or iatrogenic trauma, crack cocaine use, inflammatory or infectious diseases and pregnancy.<sup>2</sup> According to the authors, emergent surgery is a common acceptance for type A aortic dissections and it is based on several factors, such as duration from the onset of symptoms to the arrival at hospital, neurologic symptoms, hemodynamic stability, the presence of pericardial effusion or cardiac tamponade, and the risk of rupture. Preoperative neurologic deficits have been reported as a sign of poor prognosis.<sup>4</sup> The results of surgical management of acute aortic dissection with cerebral malperfusion are disappointing.<sup>5</sup> Although it was reported that patients who had coma more than 3 hours should be excluded as candidates for immediate aortic repair surgery,<sup>6</sup> there are some reports im-

plicating recovery of consciousness following surgical management that was performed more than 6 hours after the onset of neurological condition<sup>7,8</sup> as in the present case that underwent surgery approximately 8 hours after the onset of cerebral malperfusion. Optimal brain protection method is also still unclear. Appropriate cerebral protection has been reported as a significant factor which improves surgical results.<sup>6</sup> Selective cerebral perfusion has been implicated to have significant advantage rather than retrograde cerebral perfusion.<sup>8</sup> In the present case, we applied selective antegrade cerebral perfusion.

Optimal treatment for acute type A aortic dissection with cerebral malperfusion is still controversial. Although postponing surgery until the recovery of neurologic condition is a treatment option for hemodynamically stable patients, such a delay may result in death due to rupture, cardiac tamponade, or recurrent dissection.<sup>8</sup> According to some authors, emergent surgery is a treatment of choice after a quick and appropriate evaluation of cerebral ischemia.<sup>7,8</sup> Diffusion MRI is the quickest method for evaluating cerebral ischemia. We think that, although the results are poor, unconscious patients with acute aortic dissection can undergo surgical treatment if there is no sign of global cerebral ischemia on MRI. Survival can be accomplished with early and accurate diagnosis and emergent surgery using appropriate surgical techniques, such as total circulatory arrest and cerebral perfusion.

### **Conflict of Interest**

*Authors declared no conflict of interest or financial support.*

## REFERENCES

- Hagan PG, Nienaber CA, Isselbacher EM, Bruckman D, Karavite DJ, Russman PL, et al. The International Registry of Acute Aortic Dissection (IRAD): new insights into an old disease. *JAMA* 2000;283(7):897-903.
- Braverman AC. Aortic dissection: prompt diagnosis and emergency treatment are critical. *Cleve Clin J Med* 2011;78(10):685-96.
- Braverman AC. Acute aortic dissection: clinician update. *Circulation* 2010;122(2):184-8.
- Fann JI, Sarris GE, Miller DC, Mitchell RS, Oyer PE, Stinson EB, et al. Surgical management of acute aortic dissection complicated by stroke. *Circulation* 1989;80(3 Pt 1):1257-63.
- Lauterbach SR, Cambria RP, Brewster DC, Gertler JP, Lamuraglia GM, Isselbacher EM, et al. Contemporary management of aortic branch compromise resulting from acute aortic dissection. *J Vasc Surg* 2001;33(6):1185-92.
- Tanaka H, Okada K, Yamashita T, Morimoto Y, Kawanishi Y, Okita Y. Surgical results of acute aortic dissection complicated with cerebral malperfusion. *Ann Thorac Surg* 2005;80(1):72-6.
- Estrera AL, Garami Z, Miller CC, Porat EE, Achouh PE, Dhareshwar J, et al. Acute type A aortic dissection complicated by stroke: can immediate repair be performed safely?. *J Thorac Cardiovasc Surg* 2006;132(6):1404-8.
- Morimoto N, Okada K, Okita Y. Lack of neurologic improvement after aortic repair for acute type A aortic dissection complicated by cerebral malperfusion: Predictors and association with survival. *J Thorac Cardiovasc Surg* 2011; 142(6):1540-4.