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Olgu Sunumu

Traumatic aortic injury: a case report

Travmatik aortik yaralanma: Olgu sunumu

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Trauma is the leading cause of death under the age of 35 years worldwide. Traumatic aortic rupture is responsible for 18% of all road accident mortality. Eighty percent of these patients die at the scene of the accident. Of the survivors, 50% die within 24 hours if left untreated. Rapid transport and resuscitation, awareness of the injury, availability of multi-slice computed tomography (MSCT), and timely intervention can significantly improve survival in aortic injury.

Key Words: Endoluminal stenting; traumatic aortic injury.

Travma, dünya genelinde 35 yaş altındaki ölümlerin en büyük nedenidir. Travmatik aortik yırtık, bütün karayolu kaza mortalitesinin %18'inden sorumludur. Bu hastaların %80'i, kaza bölgesinde ölür. Sağkalanların %50'si, tedavi edilmeden bırakılmaları durumunda 24 saat içinde ölür. Hızlı transport ve resüsitasyon, travma konusunda uyanıklık, çok kesitli bilgisayarlı tomografi varlığı ve zamanında girişim, aortik yaralanmadaki sağkalımı anlamlı şekilde düzeltebilmektedir.

Anahtar Sözcükler: Endoluminal stent yerleştirme; travmatik aortik yaralanma.

Trauma is the leading cause of death under the age of 35 years worldwide.[1] Traumatic aortic rupture is responsible for 18% of all road accident mortality.[2] Eighty percent of these patients die at the scene of the accident. Of the survivors, 50% die within 24 hours if left untreated.[3,4]

Rapid transport and resuscitation, awareness of the injury, availability of multi-slice computed tomography (MSCT), and timely intervention can significantly improve survival in aortic injury.

CASE REPORT

A 19-year-old Saudi male was hospitalized on an emergency basis following an automobile accident. On admission, he was conscious and hemodynamically stable following resuscitation and was found to have multiple long bone injuries and facial cuts and abrasions. His chest X-ray was unremarkable.

He continued to complain of intermittent chest pain and a repeat chest X-ray on day 2 revealed mild haziness in the left hemithorax. MSCT with contrast dye was done and revealed a leak in the descending thoracic aorta and significant left hemothorax (Figs. 1,2).

The patient continued to be hemodynamically stable with satisfactory arterial blood gas values. It was decided to transfer him to a specialized cardiovascular center without insertion of a chest tube or intubation. He was successfully treated with endoluminal stenting (ELS) the next day.

DISCUSSION

In the Kingdom of Saudi Arabia (KSA), trauma is the second cause of death in all age groups, and it is the first cause of death in the first four decades of life.[5] The incidence of mortality following road traffic accidents is increasing in the KSA.[6]

The descending thoracic aorta is fixed to the spine by the preaortic fascia. The proximal aorta and arch are relatively mobile. This differential fixity results in shear stress in the region of the aortic isthmus during rapid deceleration (Fig. 3).

Eighty percent of these injuries occur at the isthmus of the aorta, the portion between the left sub-

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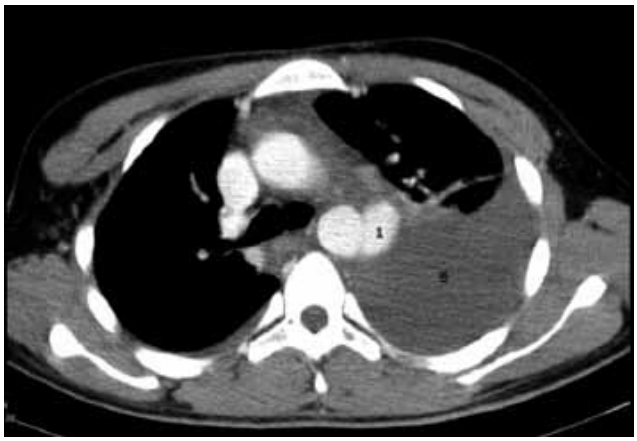

Fig. 1. Leak in descending thoracic aorta (1) and left hemothorax (2).

clavian artery and the ligamentum arteriosum. The injury and its extent can be outlined satisfactorily by transesophageal echo (TEE) and MSCT.[7,8] The spectrum of damage inflicted to the aorta varies from a small endoluminal flap to total transection of the aorta.[7]

Depending on the severity of the damage, a grading system has been proposed that can help the clinician in deciding how best to treat the patient (Table 1).[9] Grade III injuries require urgent intervention, while patients with Grade I can be managed conservatively.[7]

Table 1. Grading of severity of aortic injury based on imaging of the lesion

Grade I	Superficial injury to the aortic isthmus. Mural thrombus, intimal tear and intramural hematoma. No alteration in size of aorta.
Grade II	Subadventitial disruption of aortic isthmus and limited traumatic false aneurysm.
Grade III	Transection of the thoracic aorta with massive blood extravasation.

Some Grade II patients remain stable enough for other serious injuries to be managed first or for transfer to a specialized center. Medical management is targeted at maintaining a mean arterial blood pressure below 60 mmHg.[7,10]

Before the development of endoluminal interventions, surgery was the treatment of choice for this group of desperately ill patients.[11-15] The mortality of surgery is quoted as 24%. Paraplegia following surgery occurs in up to 19.2% of survivors.[16]

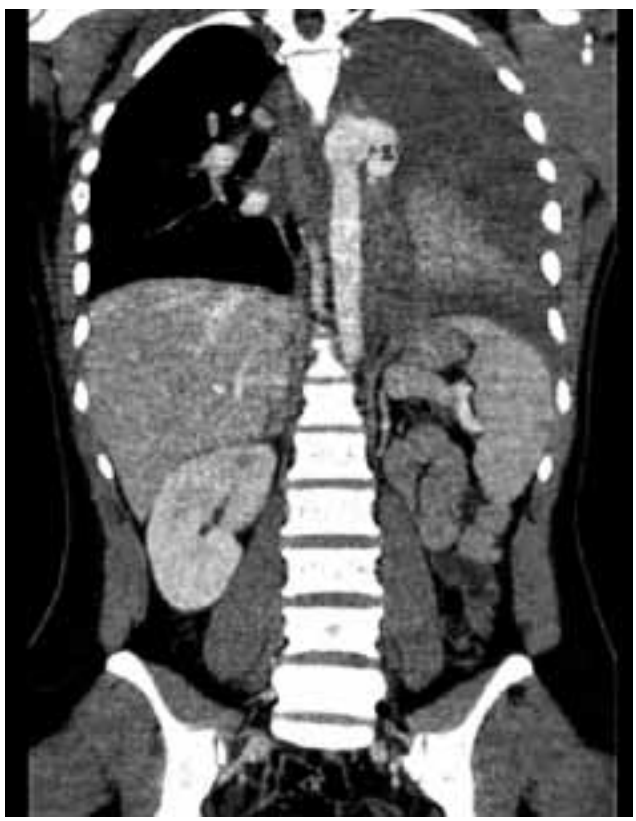

Fig. 2. Reconstructed view of the thoracic aortic injury.

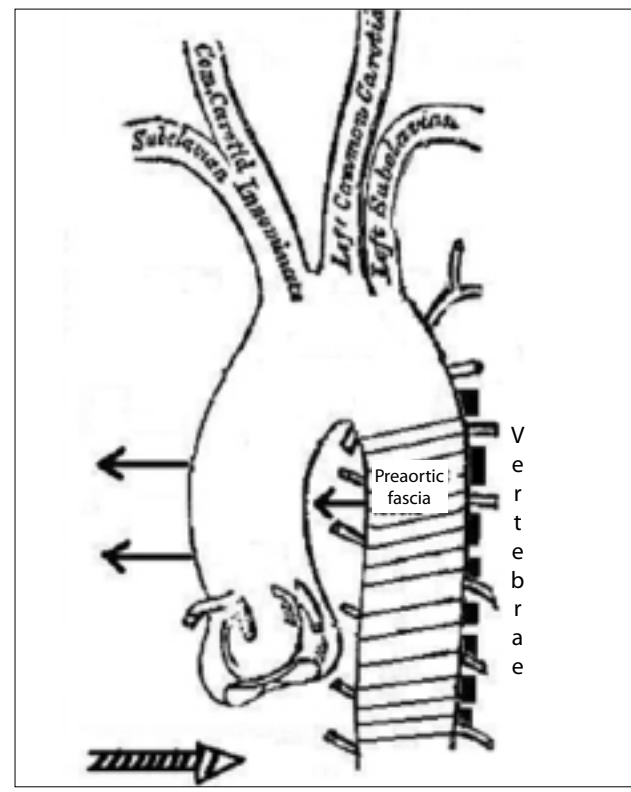

Fig. 3. Rapid deceleration fixes the descending aorta to the spine.

Endoluminal stenting (ELS) has made rapid advances and the mortality in a recent review of 284 patients reported in 61 publications was found to be 5.6%.[17] No incidence of paraplegia was reported since cross-clamping the aorta and interruption of the circulation are not required.

The introduction of airbags has added a new dimension to this grave injury. Air bag deployment can result in serious thoracic injury, including traumatic aortic injury, and has been implicated in at least three reports.[10,18,19] An inflation rate of 6 L/ms can generate a velocity between 98 and 211 mph.[20]

In one of the reports, a car crashed into the concrete wall of a parking lot at approximately 10 mph, resulting in airbag deployment. The patient suffered thoracic aortic injury, which was subsequently managed with ELS. It was significant that the patient was managed conservatively for five days before definitive treatment.[10]

In the KSA, with the availability of MSCT and of ELS in many hospitals and all facilities for repair, greater awareness of this potentially fatal condition and rapid diagnosis and transportation of patients will help to improve survival.

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