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Case Report

Calcified Thoracic Mass as a Sign of Old Blunt Aortic Trauma: An Interesting Case of Aortic Pseudoaneurysm

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ABSTRACT

Blunt aortic trauma is a relatively rare fatal event with a high acute mortality rate of more than 80% on the scene. If the patient survives the primary injury, high clinical suspicion is necessary for diagnosis. The main mechanism of the trauma is reported to be deceleration injury or falling from a height. Herein, we describe a 37-year-old healthy male on a heavy weight lifting job for many years with a left upper mediastinum calcified mass incidentally discovered 18 years after blunt chest trauma. Transthoracic echocardiography and contrast-enhanced chest computed tomography scan revealed an aortic pseudoaneurysm just after the isthmus without descending aortic flow limitation, which was subjected to endovascular repair. High clinical suspicion is necessary for the diagnosis of aortic injury during blunt chest trauma. Atypical symptoms late after a traumatic event may be a manifestation of missed traumatic aortic rupture. Surgical repair, percutaneous intervention, or hybrid approaches are proposed for the management of this ominous scenario. ***(Iranian Heart Journal 2022; 23(4): 115-119)***

KEYWORDS: Aortic disease, Four-dimensional computed tomography, Echocardiography, Multiple trauma, Descending aorta, Blunt injury

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Thoracic aortic injury due to blunt chest trauma is a rare fatal tragedy with a mortality rate of more than 80% on the scene. The mechanism of the trauma is almost always a rapid deceleration in motor vehicle accidents or falling from a height.[1] This injury, most commonly located at the isthmus, is classified into 4 types: intimal tearing (Grade I), small intramural hematoma (Grade II), pseudoaneurysm (Grade III), and rupture of all 3 layers of the aortic wall and lethal transection (Grade IV).[2,3] Late presented aortic injuries need high clinical suspicion for correct diagnosis. We herein discuss a rare case of late diagnosed aortic blunt injury nearly 2 decades after multiple traumas.

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A 37-year-old male healthy mine worker came to our echocardiography laboratory with a possible diagnosis of aortic coarctation based on the report of a low-quality chest computed tomography (CT) scan. He had been doing heavy-lifting hard work for several years until a large calcified mass in the left upper mediastinum was discovered inadvertently during routine chest radiography. On presentation to our tertiary referral center, he was a healthy young male, conscious, and oriented, while in sinus rhythm with stable vital signs (blood pressure =127/75 mm Hg and pulse rate =68 bpm) and without respiratory distress (respiratory rate =14 breaths per minute and hemoglobin O_2 saturation =96% on room air). He complained of dyspnea on exertion of New York Heart Association (NYHA) function class I and occasional chest tightness during hard work. His medical history was unremarkable, except for a car accident resulting in multiple traumas 18 years earlier, during which he was thrown from a motor vehicle with colon and spleen injuries, retroperitoneal hemorrhage, and left hemothorax based on his surgical notes. All laboratory data, including serum D-dimer (125 ng/mL [normal <250 ng/mL]) and cardiac troponin I (13 ng/L [normal<50 ng/L]), were within the normal range.

In transthoracic echocardiography, all surveys, including the abdominal aortic flow, were normal except for 2 fixed thick flaps seen at the proximal and mid parts of the descending thoracic aorta (12 cm apart) without significant turbulent flow or gradient in the suprasternal view (Figure 1a & 1b). Emergent contrast-enhanced CT scan with 3D reconstruction revealed a significantly calcified chronic pseudoaneurysm of the descending thoracic aorta, 7.9 cm × 4.5 cm in size, just after the isthmus with 2 flaps at the proximal and distal parts (Figure 1c & 1d). The patient was scheduled for thoracic endovascular aortic repair (TEVAR), which was carried out successfully.

Figure 1: 1a) Echocardiography in the suprasternal view shows 2 thick flaps in the descending thoracic aorta. 1b) Echocardiography in the suprasternal view of the descending thoracic aorta (continuous wave Doppler) shows a normal Doppler profile. 1c) Chest computed tomography scan in the sagittal view is presented herein. 1d) The image presents a 3D reconstruction of the pseudoaneurysm of the descending thoracic aorta.

Video 1: Echocardiography in the suprasternal view of the descending thoracic aorta shows 2 thick flaps in the descending thoracic aorta.

DISCUSSION

Partial or total aortic transection due to blunt chest trauma is a rare, ominous injury with a high mortality rate. Given that such trauma causes damage to several organs and multiple fractures, clinical suspicion of aortic injury is essential for diagnosis. Indeed, in patients with stable hemodynamics, aortic injury may be missed even in the acute setting. Despite interesting reports of late presented aortic root pseudoaneurysms,[4] most of these injuries are located at the isthmus, considering the deceleration injury as the most common responsible traumatic mechanism. Incidental discovery of serious aortic injury during standard workup for acute multiple traumas, such as mediastinal widening in the chest radiography, has been reported in multiple cases.[1,5,6] In a rare clinical scenario, the damage may be missed at initial survey, and it may present with atypical symptoms like cough, dysphagia, dyspnea, and chest pain due to the compressive effect of the false aneurysm on the adjacent structures or as an incidental finding several years, even decades, later.[4,7-9] Surgical, endovascular,

and hybrid approaches versus medical therapy have been proposed for the management of stable chronic aortic false aneurysms based on the aortic location of the injury, availability, team expertise, and patient preferences.[8,10-14]. Given the lack of sufficient follow-up data, each patient should be managed individually by an expert team. In our patient, endovascular management was chosen over medical therapy by the heart team because of the patient's large pseudoaneurysm and his type of work. The results were satisfactory.

CONCLUSIONS

This patient with a very late incidental discovery of an aortic false aneurysm after blunt traumatic injury in the setting of hard weight lifting daily work for several years is unique and challenging. High clinical suspicion is necessary for the diagnosis of aortic injury during blunt chest trauma. Atypical symptoms late after a traumatic event may be a manifestation of missed traumatic aortic rupture.

Declarations

There is no conflict of interest and funding source. Written informed consent was taken from the patient.

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