Trauma Case Reports 51 (2024) 101011

Contents lists available at ScienceDirect

Trauma Case Reports

journal homepage: www.elsevier.com/locate/tcr

Case Report

Post-traumatic pseudoaneurysm of the descending aorta

Izadmehr Ahmadinejad [a], Mojtaba Ahmadinejad [b,*], Ali Soltanian [b], Yasmina Ahmadinejad [c], Alireza Shirzadi [a], Pouria Chaghamirzayi [d]

[a] Students' Scientific Research Center, Tehran University of Medical Science, Tehran, Iran
[b] Department of Surgery, School of Medicine, Alborz University of Medical Science, Karaj, Iran
[c] Student of Research Committee, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[d] Alborz University of Medical Science, Karaj, Iran

ARTICLE INFO

Keywords:
Chronic cough
Vocal hoarseness
Descending aorta pseudoaneurysm

ABSTRACT

High-energy deceleration injuries of the thoracic aorta are associated with high mortality. But among long term survivors, just 2 %–5 % of traumatic aortic injuries fail initial detection and are discovered later (Pozek et al., 2012 [1]). We present a rare case of pseudoaneurysm of the descending aorta in a female with a history of chest blunt trauma 45 days before who presented with chronic severe cough and vocal hoarseness that was treated with endovascular intervention in our center.

Case presentation

A 35-year-old female presented to our clinic with complaints of chronic cough and hoarseness. Her symptoms had begun since she had blunt chest trauma in a car accident 45 days earlier. Despite the accident, she hadn't noticed any dyspnea, chest pain, or other related symptoms. Her past medical history was insignificant, with no known risk factors for cardiovascular or respiratory disorders. We proceeded with a thorough initial assessment, including a chest X-ray (Fig. 1), which revealed a blunt aortopulmonary window.

Considering the concerning findings on the chest X-ray, we decided to conduct a more detailed evaluation 45 days later, which involved a CT-angiography (Fig. 2). The results were alarming and uncovered a series of significant issues. The patient's CT-angiography revealed a dissection of the proximal descending aorta, indicating a tear in the innermost layer of the aortic wall. Additionally, there was evidence of a mediastinal hematoma, suggesting localized bleeding in the space between the lungs, heart, and other structures in the chest. To make matters even more concerning, the imaging also detected abnormalities in the descending aortic region (Figs. 3,4).

Given the severity of the findings, we promptly consulted a cardiovascular specialist. The patient was thoroughly examined, and her vital signs were stable. The specialist determined that the aortic dissection and mediastinal hematoma were likely consequences of the blunt chest trauma she experienced during the car accident. Although it was unexpected that these complications emerged without any noticeable symptoms in the immediate aftermath of the accident, the human body's response to traumatic events can be unpredictable and delayed.

As the aortic dissection and hematoma posed significant risks, the patient was admitted to the hospital for close monitoring and further evaluation. A multidisciplinary team, including cardiovascular surgeons and respiratory specialists, collaborated to devise an appropriate treatment plan. The primary goals were to manage the aortic dissection to prevent further complications, control the

* Corresponding author at: Alborz University of Medical Science, Karaj, Iran.
E-mail address: md.m.ahmadinejad@gmail.com (M. Ahmadinejad).

https://doi.org/10.1016/j.tcr.2024.101011
Accepted 2 April 2024
Available online 3 April 2024

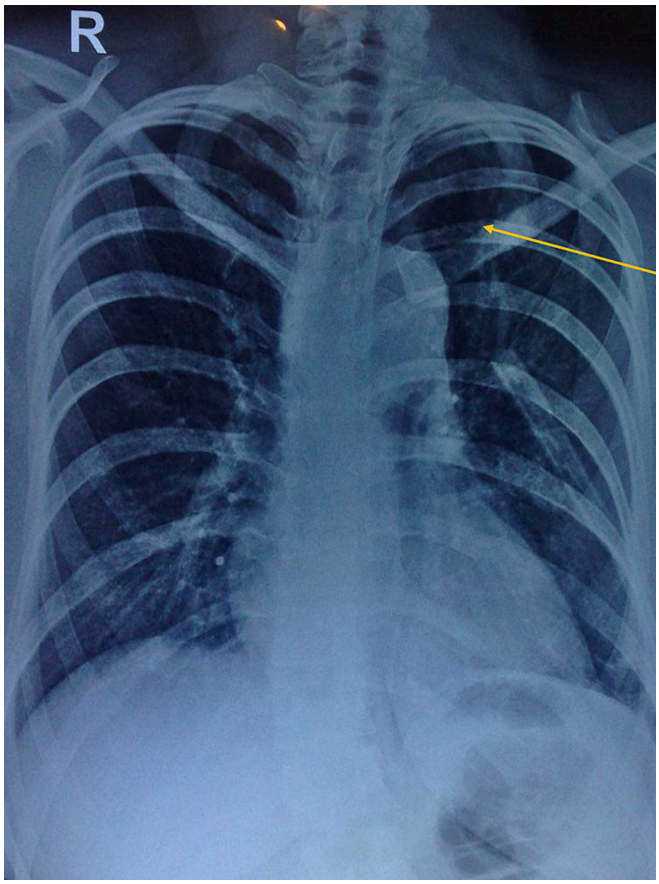


Fig. 1. Initial PA chest X-ray.

mediastinal hematoma to avoid any potential compression of vital structures and address the chronic cough and hoarseness.

Throughout her hospital stay, the patient received personalized care, and her condition was closely monitored through regular imaging and assessments. She was prescribed medications to stabilize her blood pressure and control pain, while also being advised on the importance of strict bed rest to minimize the stress on her cardiovascular system.

Over the following weeks, the patient showed promising signs of improvement. The aortic dissection was gradually stabilizing, and the mediastinal hematoma was resolving, allowing the adjacent structures to return to their normal state. Her chronic cough and hoarseness also began to subside as her body healed from the traumatic event (Figs. 5,6).

Discussion

It is well understood that high-energy deceleration injuries involving the thoracic aorta carry a significant risk of mortality. However, in the subset of individuals who manage to survive over the long term, only a small fraction, ranging from 2 % to 5 %, of traumatic aortic injuries initially escape detection and are subsequently discovered later [1]. The symptoms of chronic pseudoaneurysms encompass chest pain, dysphagia, hoarseness due to irritation of the recurrent laryngeal nerve, and breathing difficulties or coughing arising from compression of the bronchial or tracheal passages. Instances of hemoptysis, though possible, are infrequent [2,3].

Given the potential for rupture, it is imperative to address chronic pseudoaneurysms in affected patients [1]. Among the available treatment options, endovascular intervention stands as a viable choice. In the immediate aftermath of endovascular intervention for these patients, there exists a range of short-term complications including stroke, paraplegia, complications at the puncture site, device collapse, and damage to the recurrent laryngeal nerve [4]. It is noteworthy, however, that there is a dearth of comprehensive data concerning long-term complications [5,6].

Although a descending aorta pseudoaneurysm is a rare yet potentially life-threatening consequence following traumatic injuries, with an estimated incidence of 2 % to 5 % [7], it is crucial to maintain it as a plausible differential diagnosis, especially in cases where chronic cough is involved, and the patient has a history of recent trauma [8]. In our case, the occurrence of a persistent cough led us to consider this uncommon diagnosis due to the patient's history of trauma.

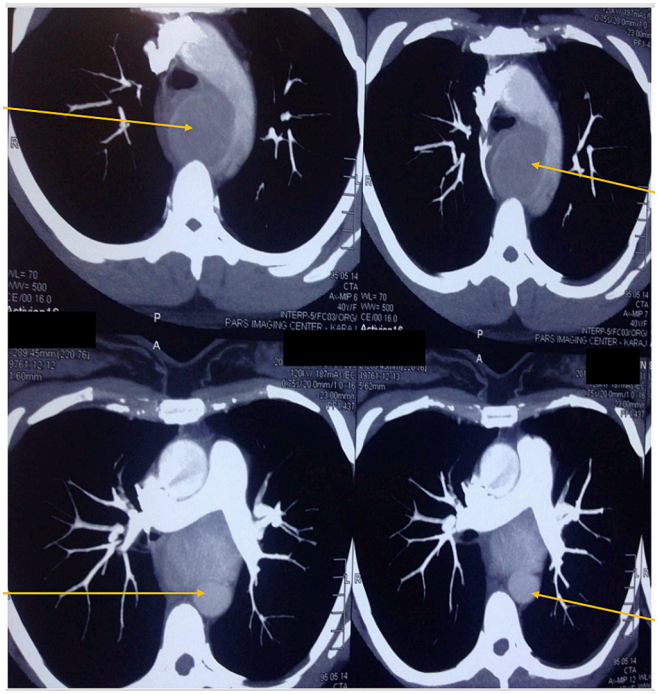
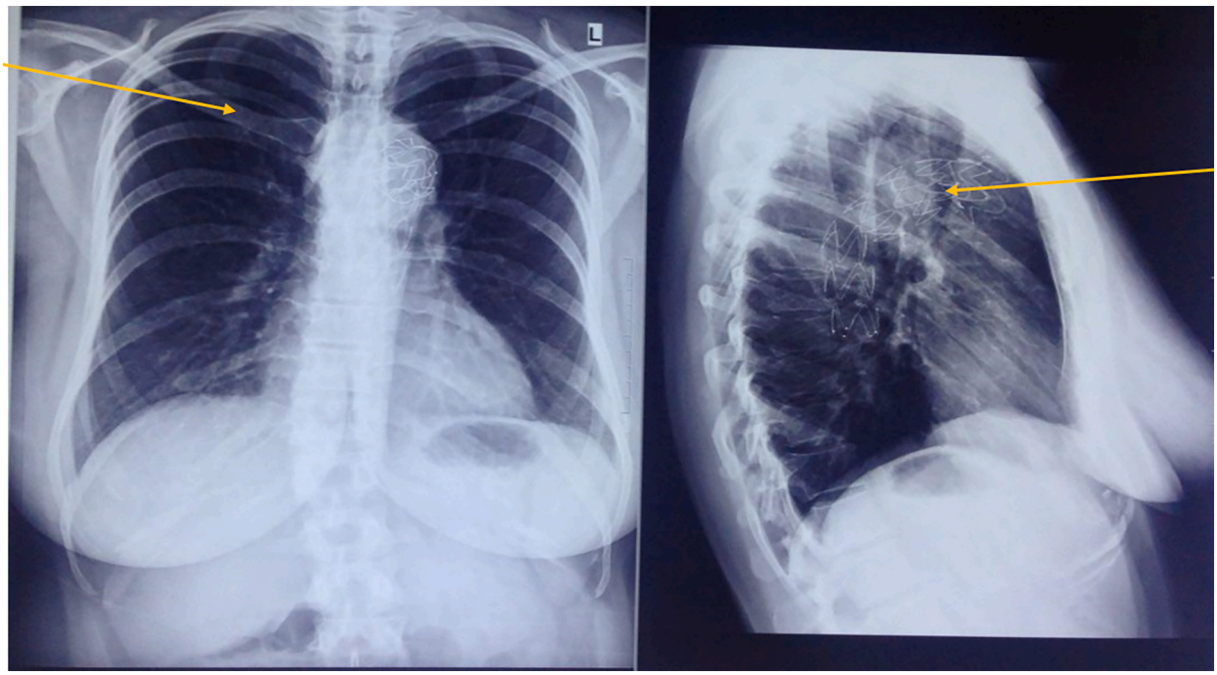


Fig. 2. CT-angiography 45 days after trauma.

Figs. 3,4. Angiography after an endovascular intervention.

Conclusion

Despite delayed symptoms, such as chronic cough and hoarseness, imaging revealed a dissection and mediastinal hematoma, prompting swift endovascular intervention. The patient exhibited improvement over subsequent weeks. The discussion stresses the importance of considering pseudoaneurysms in trauma patients with unusual symptoms and highlights endovascular treatment as effective, though long-term complications warrant further study. This case underscores the need for heightened suspicion for aortic pseudoaneurysms in trauma patients with atypical presentations.



Figs. 5,6. PA and lateral chest Xray after an endovascular intervention.

Ethical approval and consent to participate

All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Consent to participate

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Funding

This research did not receive any specific grant from any funding agency in the public, commercial, or not-for-profit sector.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

CRediT authorship contribution statement

Izadmehr Ahmadinejad: Investigation. **Mojtaba Ahmadinejad:** Conceptualization. **Ali Soltanian:** Methodology. **Yasmina Ahmadinejad:** Funding acquisition. **Alireza Shirzadi:** Formal analysis. **Pouria Chaghamirzayi:** Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

References

[1] I. Pozek, C.J. Hurt, E.J. Stern, Chronic posttraumatic pseudoaneurysm of the thoracic aorta, Curr. Probl. Diagn. Radiol. 41 (4) (Jul 1 2012) 126–127.
[2] B.A. Finkelmeier, R.M. Mentzer Jr., D.L. Kaiser, C.J. Tegtmeyer, S.P. Nolan, Chronic traumatic thoracic aneurysm: influence of operative treatment on natural history: an analysis of reported cases, 1950-1980, J. Thorac. Cardiovasc. Surg. 84 (2) (Aug 1 1982) 257–266.
[3] S.R. Gundry, R.E. Burney, J.R. Mackenzie, S.Z. Jafri, K. Shirazi, K.J. Cho, Traumatic pseudoaneurysms of the thoracic aorta: anatomic and radiologic correlations, Arch. Surg. 119 (9) (Sep 1 1984) 1055–1060.
[4] P.S. Li, C.L. Tsai, T.C. Lin, S.W. Hung, S.Y. Hu, Endovascular treatment for traumatic thoracic aortic pseudoaneurysm: a case report, J. Cardiothorac. Surg. 8 (1) (Dec 2013) 1–4.
[5] S.D. Steenburg, J.G. Ravenel, J.S. Ikonomidis, C. Schonholz, S. Reeves, Acute traumatic aortic injury: imaging evaluation and management, Radiology 248 (3) (Sep 2008) 748–762.
[6] S.D. Steenburg, J.G. Ravenel, J.S. Ikonomidis, C. Schonholz, S. Reeves, Acute traumatic aortic injury: imaging evaluation and management, Radiology 248 (3) (Sep 2008) 748–762.
[7] J.V. O'Connor, C. Byrne, T.M. Scalea, B.P. Griffith, D.G. Neschis, Vascular injuries after blunt chest trauma: diagnosis and management, Scand. J. Trauma Resusc. Emerg. Med. 17 (1) (Dec 2009) (1-0).
[8] F. Bizzarri, C. Mattia, M. Ricci, I. Chirichilli, C. Santo, D. Rose, L. Muzzi, G. Pugliese, G. Frati, P. Sartini, R. Ferrari, Traumatic aortic arch false aneurysm after blunt chest trauma in a motocross rider, J. Cardiothorac. Surg. 3 (Dec 2008) 1–2.