

PAINLESS AORTIC DISSECTION WITH CATASTROPHIC CONSEQUENCES PRESENTING AS SUDDEN LOSS OF CONSCIOUSNESS WITH NO PRODROMAL SYMPTOMS

Yasaman Navari¹, Ajit Brar¹, Bibek Karki^{1,2}, Samir Elia³

¹ Department of Internal Medicine, Michigan State University at Hurley Medical Center, Flint, Michigan, USA

² Department of Public Health, State University of New York, Albany, New York, USA

³ Department of Internal Medicine, Division of Cardiology, Michigan State University at Hurley Medical Center, Flint, Michigan, USA

Corresponding author: Yasaman Navari e-mail: ynavari891@gmail.com

Received: 24/08/2023 Accepted: 04/09/2023 Published: 21/09/2023

Conflicts of Interests: The Authors declare that there are no competing interests.

Patient Consent: Written informed consent was obtained from the patient.

This article is licensed under a [Commons Attribution Non-Commercial 4.0 License](#)

How to cite this article: Navari Y, Brar A, Karki B, Elia S. Painless aortic dissection with catastrophic consequences presenting as sudden loss of consciousness with no prodromal symptoms. *EJCRIM* 2023;10:doi:10.12890/2023_004081.

ABSTRACT

This case report presents a complex clinical scenario involving a 71-year-old female with aortic dissection accompanied by hypotension. The patient's initial presentation of sudden loss of consciousness unveiled a large pericardial effusion and cardiac tamponade, leading to emergency surgery. Subsequent diagnostic findings revealed an intramural haematoma with an intimal tear in the ascending aorta. Postoperatively, the patient experienced an ischaemic stroke, necessitating prompt neurology consultation and treatment. This report underscores the significance of early recognition and collaborative management in achieving positive patient outcomes.

KEYWORDS

Type A aortic dissection, Bentall procedure, atypical symptoms

LEARNING POINTS

- Early identification of aortic dissection symptoms, such as sudden loss of consciousness and hypotension, is crucial for effective management.
- Managing aortic dissection involves a multidisciplinary effort with emergency medicine, cardiology and surgical teams working together for optimal patient outcomes.
- After aortic dissection surgery, staying attentive to potential neurological complications such as ischaemic strokes is essential.

INTRODUCTION

Aortic dissection, a rare yet life-threatening condition, is characterised by a tear in the inner layers of the aorta, the main artery carrying blood from the heart^[1]. The consequences of this tear can be catastrophic, potentially

leading to severe complications and even mortality if not promptly recognised and managed^[2]. Among the spectrum of clinical presentations, aortic dissection accompanied by hypotension poses a particularly challenging scenario for clinicians.

Hypotension is a worrisome sign in the setting of aortic dissection as it often indicates significant blood loss, compromised organ perfusion or impending cardiovascular collapse^[3]. The combination of aortic dissection and hypotension requires rapid and accurate diagnosis, along with immediate intervention to stabilise the patient and prevent further deterioration.

In this case report, we present a compelling and enlightening clinical encounter involving a patient diagnosed with painless aortic dissection presenting with hypotension. Our aim is to shed light on the intricate diagnostic process, therapeutic decisions and management strategies employed in this challenging scenario. By sharing this case, we hope to contribute to the existing medical knowledge surrounding aortic dissection with hypotension, emphasising the importance of early recognition and appropriate management for optimal patient outcomes.

CASE DESCRIPTION

A 71-year-old female with no known past medical history presented at the ED with a chief complaint of sudden witnessed loss of consciousness for approximately 6 minutes. The patient denied prodromal symptoms, chest pain, shortness of breath, palpitation, dizziness or fever. Upon arrival at the ED, the patient was afebrile, tachycardic at 119 and had a soft blood pressure of 96/77 mmHg. Troponin was unremarkable, and ECG showed sinus tachycardia with no signs of myocardial ischaemia. Lab reports were unremarkable with normal BNP and lactic acid levels. An initial, non-contrast head CT showed no acute intracranial process. The echocardiogram showed a large pericardial effusion and chamber collapse suggestive of cardiac tamponade with normal systolic function, with an ejection fraction of 65–70% and grade 1 diastolic dysfunction. A CT scan of the chest, abdomen and pelvis revealed a moderate-sized pericardial effusion (Fig. 1), a thoracic aortic aneurysm with a maximal AP diameter of 4 cm (Fig. 2), and atherosclerotic tortuosity of the abdominal aorta without evidence of an additional aneurysm. The trauma surgery team performed an emergency subxiphoid pericardial window with biopsy and a Penrose drain was placed for cardiac tamponade within 4 hours of the patient's arrival in the ED. Haemorrhagic fluid of 210 ml was removed from the pericardium and the patient received a total of 2 l IV fluid bolus. Blood pressure dropped to 48/20 mmHg, which did not respond to 2 l of IV fluid bolus, and she was started on a dopamine infusion. After the surgery, she was gradually weaned off the dopamine drip and her blood pressure remained stable. The patient was then transferred to the cardiac care unit. Post-surgery, a repeat reading of a prior CT scan of the chest, abdomen and pelvis showed findings concerning an intramural haematoma of the aorta associated with a type A dissection, warranting transfer to a tertiary care centre for further treatment.

The patient was transferred to a tertiary care facility for urgent repair of a type A aortic dissection. Cardiovascular

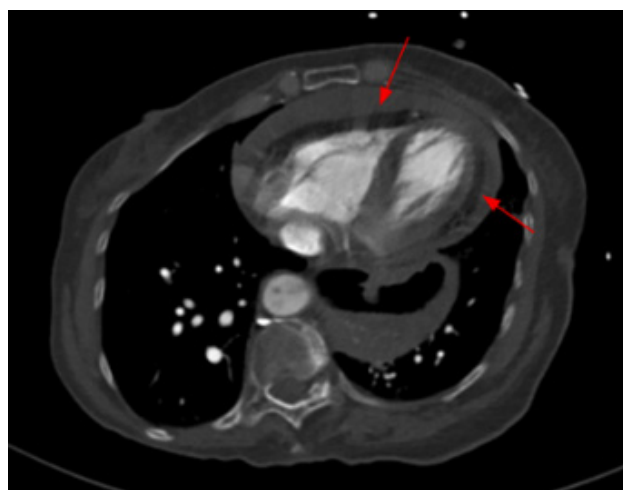


Figure 1. Computed tomography (CT) of the chest with contrast axial view showing haemorrhagic pericardial (red arrow).



Figure 2. Computed tomography (CT) of the chest with contrast A) axial view B) coronal view, showing intramural haematoma (green arrow) in the ascending aorta.

surgery was consulted thirteen hours after the initial ED admission with a preoperative diagnosis of intramural haematoma with an intimal tear in the ascending aorta and haemorrhagic pericardial effusion with tamponade. The patient underwent a median sternotomy with cannulation of the middle arch under hypothermic circulatory arrest, and replacement of the entire ascending aorta from the sinotubular junction to the undersurface of the arch along with resuspension of the commissure between the right and noncoronary leaflets and repair of the noncoronary sinus with a pericardial patch. After surgery, a transoesophageal echo confirmed the elimination of any leakage and once haemostasis was ensured, the bone was approximated with stainless steel wires followed by a sterile dressing.

On post-operative day one, the patient developed acute mental status changes and left-hand grip weakness. A non-contrast head CT revealed hypodensity and loss of grey-white matter differentiation within the right occipital lobe. An MRI of the brain was obtained which showed multifocal acute ischaemic infarct in the right occipital, right basal ganglionic, right hemispheric subcortical, right cerebellar hemisphere and left periventricular occipital white matter. Neurology was consulted, and the patient was placed on aspirin and high-intensity statin therapy while maintaining permissive hypertension.

During the admission, the patient underwent flexible laryngoscopy due to dysphonia, which revealed partial left vocal fold hypomobility and bilateral vocal fold oedema with granulation tissue. The findings were consistent with acute laryngeal injury as a result of possible neuropraxia from recent aortic injury and recent intubation. The patient was started on intravenous methylprednisolone; a repeat laryngoscopy on post-operative day 8 showed significant improvement. After more than 2 weeks of the complicated hospital course, the patient was discharged home. A repeated echo 2 weeks after discharge showed normal left ventricular function with no major valve abnormality, and a normal size aorta.

DISCUSSION

This report presents a case with syncope and cardiac tamponade due to a large pericardial effusion, caused by an intramural haematoma with an intimal tear in the ascending aorta. The prompt recognition and management of these conditions were crucial for the patient's favourable outcome. Silent and painless aortic dissections account for 6.4% of cases and are, most of the time, type A dissection^[4]. It can be particularly hazardous since they may go unnoticed until it is too late. Aortic dissections occur due to the gradual deterioration of the cells comprising the aortic wall. This deterioration typically takes place silently over many years until the weakened section of the aorta eventually tears, resulting in a dissection^[5]. Patients with acute aortic dissection usually have hypertension, but as the condition progresses, patients can present with hypotension^[6]. Cardiac tamponade is another potential complication

that may arise in individuals with aortic dissection, which is the most frequent cause of death in patients with acute type A aortic dissection before seeking medical attention^[7]. Additionally, tamponade-induced hypotension, which accompanies aortic rupture, has been recognised as a significant risk factor for perioperative mortality in individuals diagnosed with acute type A aortic dissection^[8].

Following surgical intervention for acute type A aortic dissection (ATAAD), post-operative stroke is a significant and potentially debilitating complication. A retrospective study compared the early and late outcomes of patients who experienced either haemorrhagic or ischaemic stroke after undergoing ATAAD repair surgery. The findings indicated that individuals with post-operative haemorrhagic stroke had poorer neurological outcomes and lower survival rates compared to those with ischaemic stroke^[8,10].

Lin's study has shown the possibility of post-operative stroke after type A aortic dissection repair^[11]. The patient experienced acute mental status changes and left-hand grip weakness on post-operative day 1, which were attributed to multifocal non-haemorrhagic acute infarcts in various brain regions. These neurological complications likely arose from embolic events during the surgical procedure. However, timely neurology consultation and initiation of antiplatelet therapy with aspirin and high-intensity statin therapy led to a positive outcome, with the patient returning to baseline without residual deficits.

There were well-known post-operative risk factors that were considered to improve the post-operative care of our patient^[9,12]. There were appropriate sternal precautionary measures taken into consideration to ensure proper healing of the sternotomy incision. Additionally, rehabilitation was initiated to address physical deconditioning and gait abnormalities that resulted from the surgery and prolonged hospital stay.

This case highlights the importance of a multidisciplinary approach in managing complex cardiovascular cases. The successful outcome was achieved through the collaboration of emergency medicine, cardiology, cardiovascular surgery and neurology teams. Early recognition of cardiac tamponade and the prompt initiation of treatment, followed by appropriate surgical intervention, played a pivotal role in the patient's recovery. Hypotensive aortic dissection is a severe and potentially life-threatening condition that requires swift identification and treatment. Further research is necessary to enhance our understanding of the underlying causes and risk factors associated with this condition, and to develop effective management strategies for patients with hypotensive and silent aortic dissection. This case also underscores the importance of vigilance for potential neurological complications post-cardiovascular surgery, with prompt neurology consultation and appropriate medical therapy contributing to the patient's recovery.

REFERENCES

1. Pedersen MW, Kragholm K, Oksjoki R, Møller JE, Gundlund A, Fosbøl E, et al. Characteristics and outcomes in patients with acute aortic dissection: a nationwide registry study. *Ann Thorac Surg* 2023;S0003-4975(23)00683-5.
2. Wang MM, Gai MT, Wang BZ, Maituxun M, Yesitayi G, Chen B-D, et al. The diagnostic and prognostic value of SAA1 as a novel biomarker for acute aortic dissection. *J Proteomics* 2023;104958.
3. Rivera JA, Aragon D, Thomas P, Dominici P, Menowsky M, Akala OO. RUSHing to the diagnosis: aortic abdominal aneurysm detected using the rapid ultrasound for shock and hypotension (RUSH) protocol in the wards. *Cureus* 2022;14:e32565.
4. Fatima S, Sharma K. Painless aortic dissection – diagnostic dilemma with fatal outcomes: what do we learn? *J Investig Med High Impact Case Rep* 2017;5:2324709617721252.
5. Natour AK, Rteil A, Shepard A, Weaver M, Nypaver T, Nemeh H, et al. Outcomes of patients with acute type A aortic dissection and concomitant lower extremity malperfusion. *J Vasc Surg* 2022;76:631–638.
6. Lasica RM, Perunicic JP, Popovic DR, Mrdovic IB, Arena RA, Radovanovic NL, et al. Early and late mortality predictors in patients with acute aortic dissection type B. *Cardiol Res Pract* 2022;2022:7869356.
7. Ayrik C, Cece H, Aslan O, Karcioğlu O, Yilmaz E. Seeing the invisible: painless aortic dissection in the emergency setting. *Emerg Med J* 2006;23:e24.
8. Guo R, Feng YM, Wan D. Hemorrhagic cardiac tamponade complicated by acute type A aortic dissection: a case report with critical care ultrasound findings. *Medicine (Baltimore)* 2017;96:e8773.
9. Isselbacher EM, Cigarroa JE, Eagle KA. Cardiac tamponade complicating proximal aortic dissection. Is pericardiocentesis harmful? *Circulation* 1994;90:2375–2378.
10. Apaydin AZ, Buket S, Posacioglu H, Islamoglu F, Calkavur T, Yagdi T, et al. Perioperative risk factors for mortality in patients with acute type A aortic dissection. *Ann Thorac Surg* 2002;74:2034–2039.
11. Rampoldi V, Trimarchi S, Eagle KA, Nienaber CA, Oh JK, Bossone E, et al. Simple risk models to predict surgical mortality in acute type A aortic dissection: the International Registry of Acute Aortic Dissection score. *Ann Thorac Surg* 2007;83:55–61.
12. Lin C-Y, Lee C-Y, Lee H-F, Wu M-Y, Tseng C-N, Tsai F-C, et al. Postoperative stroke after type A aortic dissection repair: hemorrhage versus ischemia. *World J Surg* 2022;46:690–700.