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Case Report

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Chronic aortic dissection in the emergency department: a case report

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ABSTRACT

Chronic aortic dissection is a complex and potentially life-threatening condition characterized by the separation of the aortic wall layers. It causes diagnostic difficulties especially in the emergency department (ED) setting due to its different presentations and critical need for rapid treatment. In this case report, we describe a 79-year-old man with a history of hypertension and oral anticoagulant use who presented to the ED with atypical chest pain, nausea and dyspnea. Initial complaints, medical history, clinical evaluation and imaging were suggestive of chronic aortic dissection. The patient's clinical course, diagnostic work-up in the emergency department, including computed tomography angiography (CTA), and management strategy are discussed. The diagnostic challenges and decision-making processes in the emergency department are highlighted. The successful outcome in this case is to demonstrate the importance of a high index of suspicion and rapid imaging in the emergency department for patients presenting with atypical symptoms and risk factors for aortic dissection. This case report aims to highlight the critical role of emergency medicine in the early recognition and management of chronic aortic dissection. It emphasizes the need for awareness and rapid action in the emergency department to improve patient outcomes in this potentially dangerous condition.

Keywords: Aortic dissection, chronic, conservative management, emergency service

INTRODUCTION

Aortic dissection is a severe and potentially life-threatening condition characterized by the tearing of the intimal layer of the aorta, allowing blood to flow between the layers of the aortic wall. This condition can present acutely or chronically, with the chronic phase typically defined as surviving the initial event for more than four weeks.[1] While acute aortic dissection is a well-recognized emergency with a high mortality rate, chronic aortic dissection presents unique challenges in diagnosis and management, particularly in the ED setting.[2]

The incidence of aortic dissection is estimated at 0,5 to 3 per 100,000 person-years, with chronic cases being less common but equally significant.[1] The diagnosis is often missed or delayed due to its nonspecific presentation and the prevalence of other more common conditions mimicking its symptoms, such as myocardial infarction or pulmonary embolism.[3] Therefore, maintaining a high index of suspicion is crucial, especially in patients with predisposing factors like hypertension, connective tissue disorders, or a history of cardiac surgery. Although the DeBakey classification system is surgical and older, the current and functional Standford system classifies dissections anatomically involving the ascending aorta as Type A and all dissections not involving the ascending aorta as Type B.[1,4] According to the time of onset of symptoms, aortic dissections are divided into acute (occurring within 1 week), subacute (1 week to 1 month) and chronic (more than 1 month).[4]

The management of chronic aortic dissection in the ED requires a multidisciplinary approach involving emergency physicians, cardiologists, and cardiothoracic surgeons. The primary goals are to stabilize the patient, manage pain, control blood pressure, and prevent complications such as aortic rupture or organ ischemia.[5]

This case report presents a patient with chronic aortic dissection who presented to the ED with atypical symptoms. It underscores the diagnostic challenges and emphasizes the importance of a systematic approach in the emergency management of this complex condition. Through this report, we aim to contribute to the growing literature on chronic aortic dissection, providing insights into its effective management in an emergency setting.

CASE

A 79-year-old male patient presented to the emergency department with complaints of chest pain, dyspnea and nausea for 6 hours. He said his complaints started 2-3 months ago and were intermittent. The patient had a history of chronic obstructive pulmonary disease (COPD), hypertension (HT), gout and aortic valve replacement (AVR) surgery. He was taking losartan, hydrochlorothiazide, warfarin, allopurinol, esomeprazole. Vital signs were as follows: temperature 36.7°C, pulse rate

87/min arrhythmic, arterial blood pressure 170/105 mmHg in the right arm and 145/85 mmHg in the left arm, SpO2 95. On physical examination; general condition was moderate to good, consciousness was clear and oriented, Glasgow Coma Score (GCS) was 15, 2/4 diastolic murmur in the aortic focus and mechanical prosthetic valve sound was heard on cardiovascular system examination. Peripheral pulses were open and palpable. Abdominal examination revealed epigastric tenderness. Atrial fibrillation (AF) and right bundle branch block (RBBB) were detected on electrocardiography (ECG). Chest radiography showed that the mediastinum was enlarged and the cardiothoracic index was increased. Transthoracic echocardiography showed the ejection fraction of 50%, a functional prosthetic valve in the aortic position, and moderate mitral and tricuspid valve insufficiency. A dissection flap was observed starting from the aortic arch. Transesophageal echocardiography also revealed a dilated aortic arch and thrombosis in the false lumen. In contrast-enhanced thoracoabdominal computed tomographic angiography: The diameter of the pulmonary trunk was 33 mm, the diameter of the right main pulmonary artery was 27 mm, and the diameter of the left main pulmonary artery was 32 mm. No significant thrombus was detected in the pulmonary conus, main pulmonary arteries and their proximal branches. Heart sizes have increased. AVR was monitored. There is circular material for the operation in the ascending aorta, and a focal contrast filling extending towards the vessel wall through the flap appearance in the protruded area on the right side wall, adjacent to the circular metallic material in the proximal aortic arch, and a thrombus with a thickness of approximately 3 cm were observed. (Postoperative pseudoaneurysm was considered) A dissection flap starts from the aortic arch and extends to the iliac bifurcation and the right common iliac artery (Standford Type B, DeBakey Type 3) (**Figure 1,2**).

Truncus brachiocephalicus, left CCA, left subclavian artery show filling from the true lumen, Celiac, SMA and left renal artery, IMA show filling from the true lumen. The right renal artery shows filling from the false lumen. In late-phase images, although weak filling was observed in the false lumen. There is an aneurysm reaching 6.3 cm in diameter in the descending aorta (**Figure 2**). An aneurysm of approximately 2 cm in diameter and dilatation reaching 14 mm in its distal part were observed in the left main femoral artery.

The patient was given antihypertensive treatment in the emergency department. He was admitted to the cardiovascular surgery intensive care unit to be planned for surgery due to chronic Stanford Type B aortic dissection along with aneurysm and thrombus. However, since it was a high-risk operation and the patient and his relatives did not accept it, the surgery could not be performed and he was taken to the outpatient clinic for follow-up.

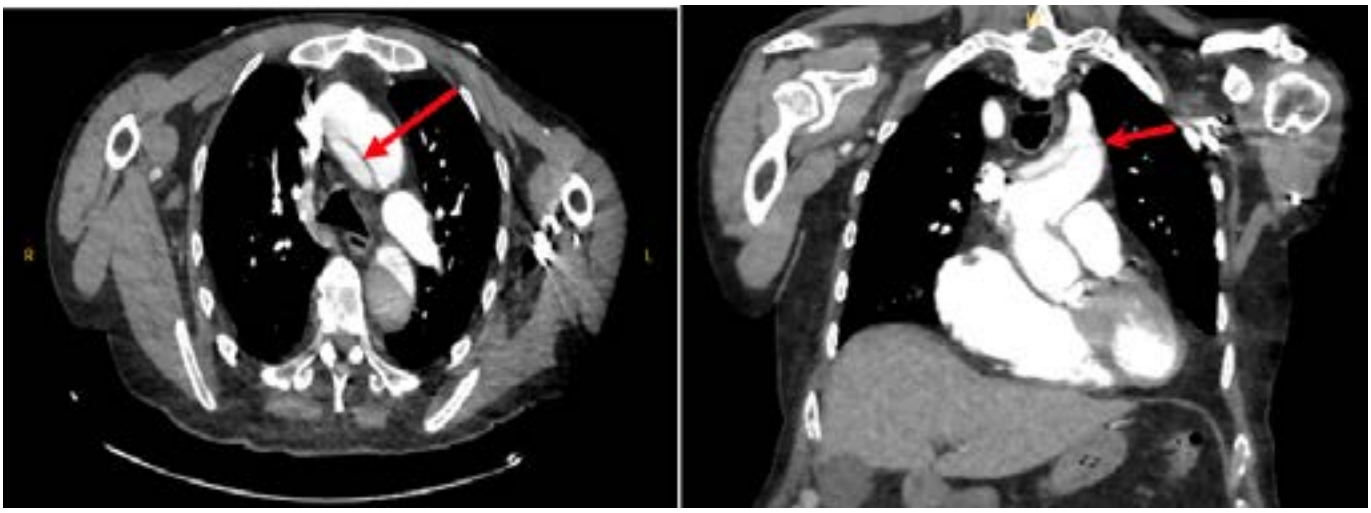

Figure 1. Standford type B, DeBakey type 3 aortic dissection

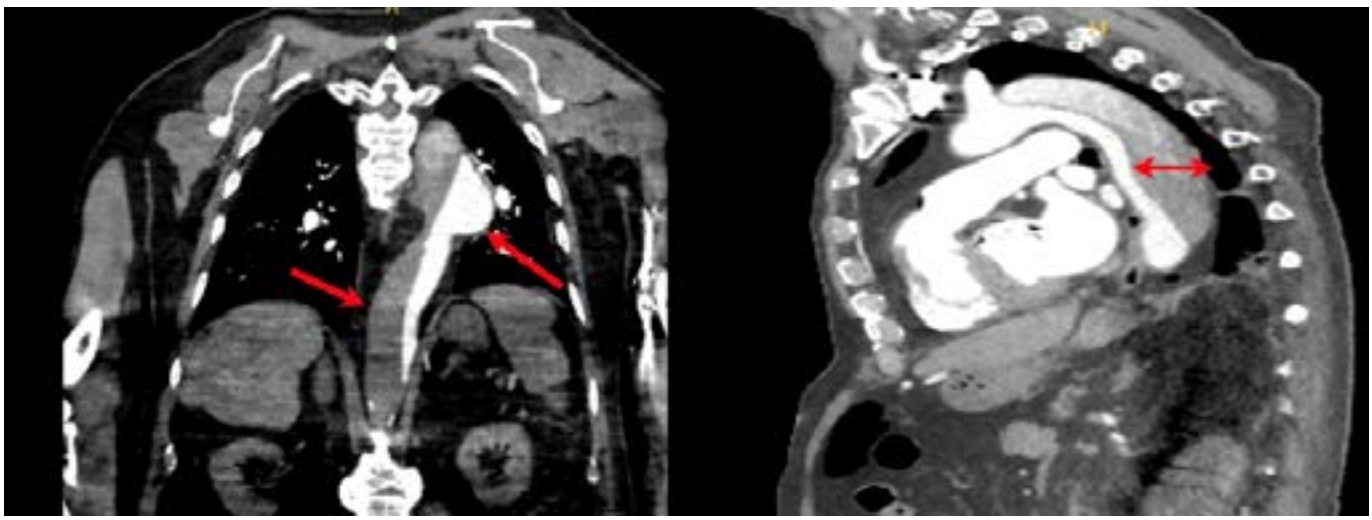

Figure 2. Aortic aneurysm in the descending aorta

DISCUSSION

The case of chronic aortic dissection presented in this report provides valuable insights into the complexities associated with diagnosing and managing this condition in the emergency department (ED). Chronic aortic dissection, while less common than its acute counterpart, poses significant challenges due to its often atypical presentation and potential for severe complications.[6]

The initial presentation of chronic aortic dissection can be misleading, as exemplified in our case. This patient's nonspecific symptoms underscore the importance of considering aortic dissection in the differential diagnosis of patients presenting with chest pain, particularly those with risk factors such as hypertension or a history of connective tissue disorders. Delayed or missed diagnosis is a critical concern, as it can lead to devastating outcomes, including aortic rupture and death.[7]

Imaging plays a pivotal role in the diagnosis of aortic dissection. Chest X-ray, computed tomography angiography (CTA), magnetic resonance imaging (MRI) and trans-oesophageal echography (TEE) are the most commonly used imaging modalities for diagnosis.[1] In this case, CTA was instrumental in confirming the diagnosis. CTA is widely recognized for its high sensitivity and specificity in diagnosing aortic dissection.[1,8] However, the patient's clinical status should guide the choice of imaging modality and the availability of diagnostic tools in the ED.[8]

The management of chronic aortic dissection in the ED focuses on stabilizing the patient, controlling blood pressure, and pain management, followed by prompt referral to specialized care.[9] Antihypertensive medication and close follow-up are at the forefront of primary treatment.[9] In this case, the multidisciplinary approach involving emergency physicians, cardiologists, and cardiothoracic surgeons was crucial in providing comprehensive care and determining the appropriate intervention.

This case also highlights the importance of a systematic approach and the need for heightened awareness among emergency medicine practitioners. Education and training in recognizing the atypical presentations of aortic dissection can enhance diagnostic accuracy and improve patient outcomes. The need for high suspicion, detailed history, rapid diagnostic imaging and a coordinated multidisciplinary approach in the emergency department's early recognition and management of chronic aortic dissection should be underlined.

CONCLUSION

This case report of chronic aortic dissection in the emergency department underlines the critical importance of considering this diagnosis in patients presenting with atypical symptoms, especially those with risk factors such as hypertension or atypical chest pain. This report may raise awareness of the various presentations of aortic dissection to emergency medicine practitioners and suggest the need for a systematic approach in the emergency department for timely, correct diagnosis and management.

ETHICAL DECLARATIONS

Informed Consent

The patient signed the free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The author has no conflicts of interest to declare.

Financial Disclosure

The author declared that this study has received no financial support.

Author Contributions

The author declared that she has approved the final version.

REFERENCES

1. Sayed A, Munir M, Bahbah EI. Aortic dissection: a review of the pathophysiology, management and prospective advances. *Curr Cardiol Rev*. 2021;17(4):e230421186875. doi: 10.2174/1573403X16666201014142930
2. Upadhye S, Schiff K. Acute aortic dissection in the emergency department: diagnostic challenges and evidence-based management. *Emerg Med Clin North Am*. 2012;30(2):307-327. doi: 10.1016/j.emc.2011.12.001
3. Hawatmeh A, Abu Arqoub A, Isbitan A, Shamoon F. A case of ascending aortic dissection mimicking acute myocardial infarction and complicated with pericardial tamponade. *Cardiovasc Diagn Ther*. 2016;6(2):166-171. doi: 10.21037/cdt.2015.11.06
4. Gawinecka J, Schönrath F, von Eckardstein A. Acute aortic dissection: pathogenesis, risk factors and diagnosis. *Swiss Med Wkly*. 2017;147:w14489. doi: 10.4414/smw.2017.14489
5. Levy D, Goyal A, Grigorova Y, et al. Aortic Dissection. [Updated 2023 Apr 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441963/
6. Shen J, Mastrodicasa D, Tse JR, Fleischmann D. Imaging challenges in chronic dissection. *Semin Roentgenol*. 2022;57(4):345-356. doi: 10.1053/j.ro.2022.06.002
7. Ohta R, Sano C. Aortic dissection and hypotension without cardiac tamponade: a case report. *Cureus*. 2023;15(8):e44418. doi: 10.7759/cureus.44418
8. Sun Z, Al Moudi M, Cao Y. CT angiography in the diagnosis of cardiovascular disease: a transformation in cardiovascular CT practice. *Quant Imaging Med Surg*. 2014;4(5):376-396. doi: 10.3978/j.issn.2223-4292.2014.10.02
9. Yusuf Beebeejaun M, Malec A, Gupta R, Alkhawam H. Conservative management of chronic aortic dissection with underlying aortic aneurysm. *Heart Int*. 2013;8(1):e4. doi: 10.4081/hi.2013.e4