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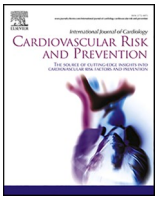

Quiet & deadly: Painless aortic dissection

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ABSTRACT

Aortic dissection is a life-threatening condition that classically presents as a sudden, sharp pain with a ripping sensation. This disease is caused by a weakened area within the aortic arterial wall, which can be classified using the Stanford classifications into type A or type B dissections, depending on the location of the tear. It is described that 17.6% of patients died before arriving at the hospital, and 45.2% of patients died within 30 days of diagnosis (Melvinsdottir et al., 2016). However, 10% of patients present without pain, leading to delayed diagnosis. In this case, a 53-year-old male with prior history of hypertension, sleep apnea, and diabetes mellitus presented to the emergency department with complaints of chest pain earlier that day. However, he was asymptomatic on presentation. He had no cardiac history. He was admitted, and a subsequent workup was performed to rule out myocardial infarction. The following morning a slight bump in troponin consistent with a Non-ST Elevated Myocardial Infarction (NSTEMI) was noted. An echocardiogram was ordered and showed aortic regurgitation. This was followed by computed tomography angiography (CTA), which revealed acute type A ascending aortic dissection. He was transferred to our facility and underwent an emergent Bentall procedure. Ultimately, the patient tolerated the surgery well and is recovering. This case is essential because it emphasizes the painless presentation of type A aortic dissection. Mis- or undiagnosed, this condition often leads to death.

1. Introduction

Aortic dissection is a significant life-threatening condition [1]. This condition is relatively rare and classically presents as a sudden ripping or tearing sensation that radiates to the chest, abdomen, or back. However, dissections can have complex clinical presentations, potentially leading to a delayed or missed diagnosis. This catastrophic condition can present non-classically with minimal or no pain. In this case report, we will discuss a patient who presented to an outside hospital asymptomatic after having transient angina-like symptoms earlier that day. He remained asymptomatic for 36 hours without further complaints but was found to have an Acute Type A Aortic Dissection (ATAAD).

2. Case report

A 53-year-old male with a past medical history of hypertension, sleep apnea, and diabetes mellitus presented to an outside hospital with reports of chest pain while driving his truck the morning of admission. He developed anterior chest pain radiating to his neck, teeth, and left arm, which disappeared shortly after. Associated symptoms were blurry vision, lower extremity paresthesia, worsening dyspnea, and shortness of breath. He denied any prior episodes of chest discomfort or other cardiac histories. He had no infectious symptoms and did not start any medications recently. When he presented to the emergency department, he had no pain or complaints but was prompted to come to the hospital by his wife. A complete cardiac workup was done, which showed normal cardiac enzymes and electrocardiogram (EKG). Labs were significant only for hypokalemia. The patient was admitted overnight to rule out a myocardial infarction with serial enzymes and a repeat EKG. Continued Positive Airway Pressure (CPAP) was initiated for his diagnosed sleep apnea; home medications of amlodipine and atorvastatin were continued for hypertension and hyperlipidemia. No acute events overnight were reported, and he remained asymptomatic throughout the night.

The following day, a repeat EKG showed sinus bradycardia with nonspecific T-wave changes inferiorly. A slight bump in troponin was consistent with a Non-ST Elevated Myocardial Infarction (NSTEMI). A

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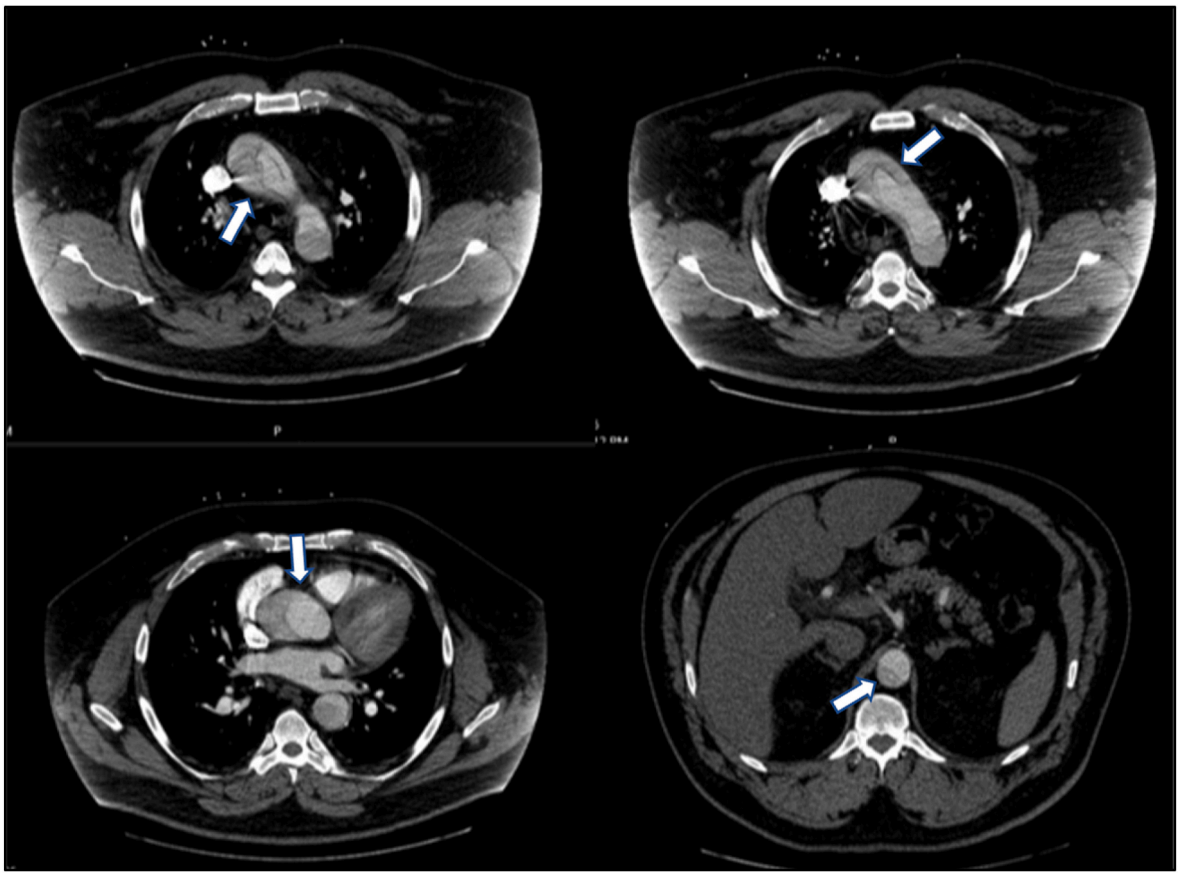

Fig. 1. CTA Images: Stanford type A, dissection involving the ascending aorta, aortic arch, and descending aorta down to the level of the celiac trunk (White Arrows).

systolic murmur was heard on auscultation. The patient was started on beta blockers, high-dose statins, and antiplatelet therapy, and an echocardiogram (echo) was ordered. It showed new aortic regurgitation. The echo was followed up with a chest angiogram to evaluate the aorta. He was found to have an ATAAD down to the level celiac trunk (Fig. 1). He was transferred from the outside hospital to our facility for further management. Cardiothoracic surgery evaluated his scans en route, and the decision was made to take him to the operating room on arrival to perform an emergent Bentall procedure (Fig. 2). A 28mm Gelweave aortic graft and a 25mm aortic valve were placed under hypothermic circulatory arrest. The procedure went well, and the patient is still recovering.

3. Discussion

The incidence of aortic dissection ranges from 5 to 30 cases per million people per year [2]. Fortunately, this disease is uncommon but has high morbidity and mortality if left untreated or misdiagnosed. This is initially misdiagnosed in up to 38% of patients [3].

According to the International Registry of Acute Aortic Dissection study, abrupt onset of pain is the most common presenting symptom [4]. Alongside this, the classic findings of aortic dissection are sudden onset of tearing chest, back, or abdominal pain [3,5]. Symptomatology of pain is found in over 90% of patients, while the remaining 10% are painless [3]. These include signs/symptoms of heart failure, a complex effusion on CT or echocardiogram, seizure activity due to acute cerebral ischemia, or without signs/symptoms of pain [6]. Of these two groups, Type A aortic dissection occurred more frequently in the painless group [7].

Many reports in the literature describing missed clinical diagnoses often result in the patient's death. For example, two fatal cases of ATAAD were reported where the patients presented with multi-organ failure, gastrointestinal bleeding, and transient ischemic attack–like symptoms [8]. Another case described the delay in diagnosis in an asymptomatic patient presenting with an abnormal electrocardiogram (ECG) [9].

The work-up of painless aortic dissections is complex. The majority (71.4%) of painless aortic dissections have normal EKGs, and approximately 11.4% of cases showed cardiac arrhythmias in a retrospective study [10]. Aortic dissections can be associated with arrhythmias, such as atrial fibrillation and supraventricular tachycardia. Complete heart block as a sign of painless type A aortic dissection has also been documented [11]. Given the clinical ambiguity and severity of ATAAD, this disease should always be considered in differential diagnoses of non-traumatic chest pain.

Management of ATAAD includes aggressive antihypertensive treatment in the setting of systemic hypertension and prompt surgical evaluation. In recent years, transcatheter-based approaches such as endovascular stents have been used in small case series and observational studies. However, there is a lack of evidence to support the use in the setting of ascending type A aortic dissection disease due to technical and stent-graft limitations [12]. This approach could be used in patients who are surgically inoperable due to comorbidities to help reduce the morbidity and mortality associated with untreated ascending Type A aortic dissection disease.

4. Conclusion

In summary, this case report illuminated the diagnostic difficulty of aortic dissections. This is a catastrophic illness that manifests in various clinical pictures, notably also presenting asymptomatically. It is shown to be underdiagnosed in the population, leading to a high morbidity and

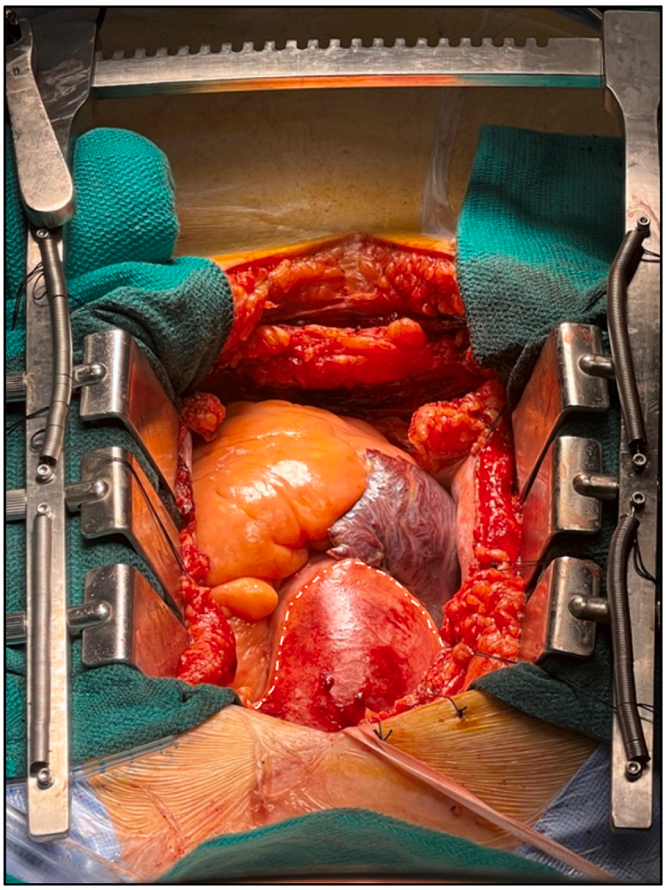

Fig. 2. Gross Aortic dissection (outlined in dashed white line) involving ascending aorta and aortic arch.

mortality rate. High clinical suspicion should prompt an emergent workup for aortic dissection.

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.

References

[1] I.H. Melvinsdottir, S.H. Lund, B.A. Agnarsson, K. Sigvaldason, T. Gudbjartsson, A. Geirsson, The incidence and mortality of acute thoracic aortic dissection: results from a whole nation study, Eur. J. Cardio. Thorac. Surg. 50 (6) (2016) 1111–1117.
[2] I.A. Khan, C.K. Nair, Clinical, diagnostic, and management perspectives of aortic dissection, Chest 122 (1) (2002) 311–328.
[3] J. Young, A.M. Herd, Painless acute aortic dissection and rupture presenting as syncope, J. Emerg. Med. 22 (2) (2002) 171–174.
[4] P.G. Hagan, C.A. Nienaber, E.M. Isselbacher, D. Bruckman, D.J. Karavite, P. L. Russman, et al., The international Registry of acute aortic dissection (IRAD): new insights into an old disease, JAMA 283 (7) (2000) 897–903.
[5] M.E. De Bakey, D.A. Cooley, O. Creech Jr., Surgical considerations of dissecting aneurysm of the aorta, Ann. Surg. 142 (4) (1955) 586–610. ; discussion, 1-2.
[6] R. Mando, D. Tim, A. DeCicco, J. Trivax, I. Hanson, Master of the masquerade: an atypical presentation of acute aortic dissection, Case Rep Cardiol 2020 (2020), 5743985.
[7] S.W. Park, S. Hutchison, R.H. Mehta, E.M. Isselbacher, J.V. Cooper, J. Fang, et al., Association of painless acute aortic dissection with increased mortality, Mayo Clin. Proc. 79 (10) (2004) 1252–1257.
[8] S. Fatima, K. Sharma, Painless aortic dissection-diagnostic dilemma with fatal outcomes: what do we learn? J Investig Med High Impact Case Rep 5 (3) (2017), 2324709617721252.
[9] V.G. Becerra-Gonzales, M. Calfa, R. Sancassani, Painless type A aortic dissection, BMJ Case Rep. 13 (5) (2020).
[10] Z.Y. Liu, Y.L. Zou, B.L. Chai, H.S. Zeng, Analysis of clinical features of painless aortic dissection, J Huazhong Univ Sci Technolog Med Sci 34 (4) (2014) 582–585.
[11] S. Garg, L. Perez, S. Griffin, Painless type A aortic dissection presenting as complete heart block, Resuscitation 75 (3) (2007) 398–399.
[12] A. Harky, A. Al-Adhami, Stenting in type A aortic dissection: fantasy or reality? J. Vis. Surg. 4 (2018).