

Case Report

Penetrating Aortic Ulcer in an Elderly Female: An Important Consideration in Chest Pain Presentations

Nicholas Snels*

Griffith University, Australia

*Corresponding Author: Dr. Nicholas Snels, Griffith University, Australia, E-mail: nicholas.snels@health.qld.gov.au

Received: 24 July 2019; **Accepted:** 14 August 2019; **Published:** 15 November 2019

Abstract

Introduction: Chest pain is one of the most common presenting complaints to emergency departments. Recent advances in imaging have allowed greater definition of acute aortic syndromes, a collection of diseases, including aortic dissections in addition to rarer aortic ulceration and intramural thrombus. Herein I present a case of a lady with chest pain caused by a penetrating aortic ulcer.

Case Report: A 74 year old female presented with central chest pain of four days duration on a background significant for hypertension, smoking and a family history of vasculopathy. Physical examination followed by radiological investigations revealed a penetrating aortic ulcer in the ascending aorta. The patient was referred to the vascular team who managed her conservatively with antihypertensives.

Conclusion: These are many causes for acute onset chest pain. Aortic arch ulceration is a rare cause, however remains for consideration in working these patients up given the possibility to lead to aortic rupture.

Keywords: Chest pain; Aortic ulcer; Aortic dissection; Aortic arch

1. Introduction

Chest pain accounts for a significant proportion of emergency department presentations [1]. Appropriate recognition and management of the cause of this pain is essential due to the high mortality associated with several causes of chest pain. Whilst aortic dissection has been well studied, advances in imaging have allowed greater recognition of and study into other acute aortic syndromes, namely aortic arch ulceration and intramural haematomas [2]. Recognition and appropriate management of these entities is essential as untreated, they have the potential to cause aortic rupture. Despite this, there is a lack of consensus regarding imaging and management of these conditions.

2. Case Report

Mrs X was a 74 year old female who presented to the emergency department with intermittent central chest pain for four days, sharp in nature and radiating to her right shoulder and back. Her medical background was significant for dyslipidaemia and hypertension, with no personal cardiac history. Her pertinent medications were frusemide 20 mg mane and rosuvastatin 20 mg. She had a family history of myocardial infarction on her paternal side, in addition to brother dying from a ruptured aortic aneurysm. She was retired and previously a smoker with a 40 pack year history.

On examination, she was comfortable and pain free, normotensive with a heart rate of 74 beats per minute. Her examination was otherwise largely unremarkable. An electrocardiogram (ECG) demonstrated normal sinus rhythm. Serial troponins were negative. Chest x-ray was unremarkable and the pain was non-responsive to glyceryl trinitrate (GTN). Ongoing pain despite these investigations prompted a computed tomography (CT) aortogram to exclude an aortic dissection. This demonstrated small penetrating atherosclerotic ulcers measuring up to 4mm in the aortic arch distal to the left subclavian origin, with no dissection appreciated and no intramural haematoma.

She was referred to the vascular team, given regular analgesia and treated conservatively as a penetrating atherosclerotic ulcer with amlodipine and ramipril, aiming for a blood pressure of below 120/80. On follow up 4 months later she had been symptomatically improved, and repeat imaging showed stable ulceration within her aorta.

3. Discussion

Since first being described in the 1930s, the pathophysiology of penetrating aortic ulcers (PAUs) is not fully understood [2]. It is hypothesised that erosion and ulceration of atherosclerotic plaques through the internal elastic lamina of the aorta causes this condition. It can be classified as a type of acute aortic syndrome, a term which encompasses intramural haematomas and the most well studied aortic dissections. Untreated, the plaque may cause local dissection into the tunica media and can predispose the aorta to rupture, leading to significant mortality.

Patients with a PAU are generally elderly, have a background of hypertension and of underlying atherosclerosis [3]. This is in contrast to aortic dissections, where atherosclerosis may be variable and the patient cohort younger. Though difficult to distinguish clinically, penetrating ulcers lack signs such as pulse inequality and neurological deficits that may be evident in an aortic dissection. Some patients may have no pain at all, with the ulcer being an incidental finding during other investigations. Distinguishing the subtypes of acute aortic syndrome is difficult, however important given the variability in prognosis and treatment options [4]. A variety of imaging modalities have been used to investigate paus and monitor their disease progression. CT has been the most common modality, however, MRI and aortic angiography have also been utilised [5]. Echocardiography has also been investigated and may aid in differentiation between acute aortic syndrome, however large scale data is lacking.

At present, the management of penetrating aortic ulcers is not well established. Management is mainly guided by the location of the ulcer. Descending ulcers have been effectively managed with aggressive blood pressure control, leading to eventual healing of the ulcer [6]. Ascending ulcers are prone to rupture; hence a surgical approach has

traditionally been employed. Surgical intervention is complicated by the comorbidities leading to the formation of the ulcer, and an endovascular approach is an emerging option for these patients.

4. Conclusion

Though penetrating aortic ulcers are an uncommon cause of chest pain, they remain an important differential due to them predisposing the aorta to possible rupture. Clinically they remain difficult to distinguish from aortic dissections, and advances in imaging have allowed them to be differentiated from the other acute aortic syndromes. Management remains largely dependent on location, however this case demonstrates symptomatic improvement following conservative management.

Informed Consent

Informed consent was gathered from the patient to write this case report. Please see attached signed consent form.

Conflicts of Interest

The author has no conflicts of interest to disclose.

References

1. Bhuiya F, Pitts S, McCaig L. Emergency department visits for chest pain and abdominal pain: United states, 1999-2008. NCHS Data Brief 43 (2010): 1-8.
2. Baikoussis N, Apostolakis E. Penetrating Atherosclerotic Ulcer of the Thoracic Aorta: Diagnosis and Treatment. Hellenic J Cardiology 51 (2010): 153-157.
3. Coady M, Rizzo J, Hammond G, et al. Penetrating ulcer of the thoracic aorta: What is it? How do we recognize it? How do we manage it?. Journal of Vascular Surgery 27 (61998): 1006-1016.
4. Ganaha F, Miller D, Sugimoto K, et al. Prognosis of aortic intramural hematoma with and without penetrating atherosclerotic ulcer: a clinical and radiological analysis. Circulation 106 (2002): 342-348.
5. Vilacosta I, San Román J, Aragoncillo P, et al. Penetrating atherosclerotic aortic ulcer: documentation by transesophageal echocardiography. Journal of the American College of Cardiology 32 (1998): 83-89.
6. Kazerooni E, Bree R, Williams D. Penetrating atherosclerotic ulcers of the descending thoracic aorta: evaluation with CT and distinction from aortic dissection. Radiology 183 (1992): 759-765.

Citation: Snels N. Penetrating Aortic Ulcer in an Elderly Female: An Important Consideration in Chest Pain Presentations. Archives of Clinical and Medical Case Reports 3 (2019): 463-465.



This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC-BY\) license 4.0](https://creativecommons.org/licenses/by/4.0/)