



Case Report

Acute aortic dissection mimicking as ureteral calculus

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Abstract

Acute aortic dissection is an uncommon but life-threatening emergency, which is often missed in up to 38% of patients on initial evaluation, and in up to 28% of patients the diagnosis is made at autopsy. Painless aortic dissection has been reported, but is relatively uncommon. The mortality rates are estimated at 50% by 48 hours and increase by 1% per hour if undiagnosed. We report a case of atypical aortic dissection who presented to ER with subtle unspecific renal colicky like pain as a primary symptom, which had made the prompt diagnosis very challenging and difficult.

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1. Introduction

Flank pain is a common complaint in the emergency department with a variety of causes. The causes could be as trifling as myofascial pain to more severe such as renal calculus and extend to critical such as abdominal aortic aneurysm or aortic dissection. Overall, acute ureteral obstructions are the most common and disturbing cause. Due to the complex innervation pattern of the flank, pain can arise from a number of different organ systems.¹ Multiple studies have shown that after using noncontrast computed tomography (CT) scans in patients who were thought to have renal colic, ~10% are ultimately given an alternate diagnosis.²

Acute aortic dissection is a relatively rare but life-threatening medical emergency, and can be extremely difficult to diagnose, especially when it presents atypically. The mortality rates are estimated at 50% by 48 hours and increase by 1% per hour if undiagnosed.³ The outcome is usually fatal

with rapid development of serious complications. Clinical manifestations of acute aortic dissection are diverse in the general population. According to the previous report by Hagan et al only ~ 72.7% of patients present with typical textbook presentations such as severe tearing chest pain.⁴ There is still a significant percentage of patients presenting with diverse atypical signs and symptoms which might mislead the first line physician to misdiagnose such a lethal condition.

2. Case Report

A 58-year-old male presented to our Emergency Department (ED) at Taipei Cathay General Hospital complaining of sudden onset and persisting left flank soreness for the past 30 minutes. He also complained of mild left lower limb numbness without weakness. He had a medical history of chronic obstructive pulmonary disease but denied having hypertension or diabetes. He was also treated for a left ureteral stone a few months ago with extracorporeal shock wave lithotripsy in another medical facility. The patient described the left flank soreness with radiation to the groin, which was exactly the same feeling he had experienced with his previous left ureteral stone. Upon arrival to the ED, the patient's vital signs were as

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follows: blood pressure, 129/44 mmHg; pulse, 46 beats/min with regular sinus bradycardia (for which the patient was not taking any medication that could affect the heart rate at the moment); respirations, 17 breaths/min; and body temperature, 36.7°C.

On physical examination, a significant left costovertebral knocking pain was demonstrated on percussion. Besides the numbness of his left lower limb, the muscle power was normal. The patient's four extremities' peripheral pulse and blood pressure revealed no significant difference. Under the clinical signs and symptoms described by the patient; the pain was similar to what he had experienced a few months previous when he was diagnosed and treated with left ureteral calculus. Therefore, renal calculus was highly suspected initially.

However, his urinalysis results were within the normal range, with no significant finding on kidney, ureter, and bladder (KUB) X-ray, nor was hydronephrosis found on renal ultrasound. Due to the unusual neurological presentation accompanied with the ureteral colic pain, vascular pathology was also suspected. Contrast enhanced thoracic and abdominal aorta CT was performed and revealed an extensive Stanford type A aortic dissection (Figure 1) involving whole aorta and bilateral common iliac arteries, with orifice of superior mesenteric artery (SMA) false lumen and a nearly 3.5 cm (in length) mural thrombosis in the left common iliac artery (Figure 2). The dissection was also extended to the left renal artery with regional cortical infarction at the inferior aspect of the left kidney (Figure 3). The patient was operated upon by



Figure 1. Presence of intimal flap with double lumens throughout ascending aorta (arrow) from the aortic root to descending and abdominal aorta and stop at bilateral common iliac arteries.



Figure 2. A segment of mural thrombosis of nearly 3.5 cm in length at left common iliac artery (arrow).



Figure 3. Regional less contrast enhancement at inferior aspect of left kidney (arrow).

the cardiovascular surgeons and had an uneventful post-operative course.

3. Discussion

Acute aortic dissection is missed in up to 38% of patients on initial evaluation, and in up to 28% of patients the diagnosis is made at autopsy.⁵ A 2011 report estimates an incidence of acute aortic dissection is three or four cases per 100,000 people per year.⁶ According to the International Registry of Acute Aortic Dissection (IRAD), the typical patient with acute aortic dissection is a male in his 70s with a history of hypertension, who presents with an abrupt onset of tearing, cutting, or shearing chest pain. Several case series found that only ~60–70% of patients present with typical manifestations.⁷ Absence of typical pain in patients with acute aortic dissection was noticed with a prevalence of 5–15% in Western populations.⁸

The clinical manifestations of acute aortic dissection are diverse in the general population. Different symptoms occur because of perfusion defect of the brain, limbs, and visceral

organs. Thus, there appeared to be a wide range of clinical presentations, which prolongs investigation in the ED and increases the risk of in-hospital death. In fact, it suggests the need for first emergency physicians to be highly attentive when making diagnosis of this life-threatening disease.

In our case, the patient presented with some subtle unspecific symptoms such as left flank pain and left lower numbness, which had made the diagnosis very difficult and challenging for the emergency physician. The left flank pain that mimic ureteral colic pain is due to ischemia infarction of the left kidney, which is caused by the perfusion defect from left renal artery dissection. The ischemic pain of the kidney caused by vascular angina was devastating and often mistaken as renal colic by the patient. Along the ischemic change of the kidney which caused visceral pain that may elevate the vagal tone⁹ and cause the patient's bradycardia. The patient also complained of left lower limb numbness which was due to occlusion of the left common iliac artery by mural thrombosis from the extensive aortic dissection.

Classic presentations should not always be expected at the emergency room. Atypical presentation is not uncommon, but may cause a delay or misdiagnosis due to diverse subtle presentations. Ischemic necrosis due to ceased visceral circulation is one of the most severe complications of acute aortic dissection. A malperfusion syndrome occurs in 25–30% cases of acute aortic dissection and can dramatically reduce the chance of a successful outcome.¹⁰ Neurologic deficits have been associated with 18–30% of cases of acute aortic dissection.¹¹ However, acute aortic dissection presenting with isolated ischemia of the leg is rare, occurring in ~ 10% of patients, but it has been well described.¹² Therefore, knowing the subtle and atypical presentations well and thinking beyond classic textbook descriptions are essential for emergency physicians in diagnosis of atypical acute aortic dissection.

Proper diagnosis of acute aortic dissection can be difficult when patients present atypically, especially with subtle unspecific symptoms. In the case we reported, the patient presented with the signs and symptoms of isolated limb ischemic injury without obvious cause; aortic dissection should be considered, even without the presence of characteristic pain. A heightened level of attention with correct usage of diagnostic tools such as echocardiogram and CT, are needed for better diagnosis and management of aortic dissection. For emergency

physicians, integration and addressing all of the patient's seemingly unspecific complaints may very well be one of the most important factors in diagnosis of the atypical aortic dissection.

Conflicts of interest

None of the authors have any conflicts to disclose.

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