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Fatal Case of Type A Aortic Dissection Presenting As Acute Renal Failure

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Abstract

Aortic dissection is a life-threatening illness requiring early diagnosis and treatment. Uncommon early presentations mimicking various illnesses can delay diagnosis. Acute renal failure (ARF) is an uncommon complication of type A aortic dissection (AAD). Presentation with ARF is associated with an increased risk of in-hospital death and persistence of renal dysfunction at midterm follow-up in type B aortic dissection, but not AAD. We report a case of a type A aortic dissection complicated by ARF, with a fatal outcome. A 56-year-old male was transferred to the emergency service with anuria and rapid deterioration of renal function. Computed tomography showed type A aortic dissection with near-complete collapse of the true lumen at the level of the renal arteries and complicated with left renal infarct. Because of deterioration of his general condition during hemodialysis, he was treated with supportive measures including ventilatory support. He died two days after admission. Aortic dissection initially mimicking ARF is rare. Accurate early diagnosis of aortic dissection with indeterminate presentation is crucial.

Key words: *Aortic dissection, computed tomography, renal failure*

Introduction

Acute aortic dissection (AAD) is a life-threatening situation related to high morbidity and mortality. The most important known acquired reason that leads to dissection is chronic arterial hypertension. With respect to the renal failure – uncommon complication of type A aortic dissection – aortic dissection is not something that is always considered and is still not a very common presentation. However, when present, preoperative renal failure in patients with acute type B dissection (not type A) has been accentuated to be an independent predictor of mortality [1]. Here we present a case of a patient presenting with acute renal failure – long-standing hypertension diagnosed with type A aortic dissection. He died two days after admission. Through the case, we highlight the importance of having

type A aortic dissection as an important differential in patients presenting with anuria, who have a long-standing history of uncontrolled hypertension, and a lack of awareness of this atypical presentation may lead to a delay in diagnosing this rapidly fatal condition.

Case Report

A 56-year-old male was transferred from a local primary care center to our emergency service due to the sudden onset of anuria and rapid deterioration of renal function. Laboratory data was significant for creatinine of 4.9 mg/dL, potassium of 5.9 mMol/L and a hemoglobin level of 11.9 g/L. Two hours later, follow-up revealed that his hemoglobin level declined to 9.7 g/L, so a thoraco-abdominal CT without contrast was performed. This showed mediastinal hemorrhage and possible aortic dissection. A CT angiogram of the chest, abdomen, and pelvis was subsequently performed, which showed a large type A dissection starting in the ascending aorta, extending into the abdominal aorta, complete collapse of the true lumen at the level of the renal arteries complicated with left renal infarct, with extension of the dissection into the common iliac arteries bilaterally, and ending at the level of iliac bifurcation (Figures 1,2). In addition, mediastinal hematoma and bilateral minimal hemothorax were seen (Figure 2). Because of deterioration of his general condition during hemodialysis, he was treated with supportive measures including ventilatory support. His poor condition did not allow him to operate the aortic dissection. He died two days after admission.

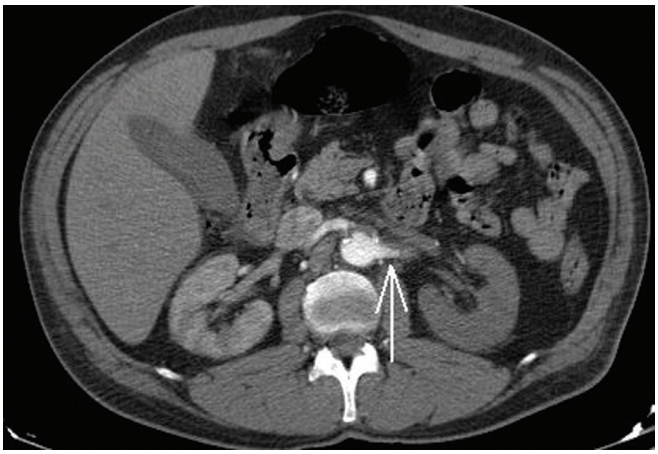

Figure 1. Contrast-enhanced axial CT scan shows that the true lumen is completely collapsed at the level of the renal arteries. The left renal artery came off the false lumen of the dissection (arrow) and resulted in left kidney infarct.

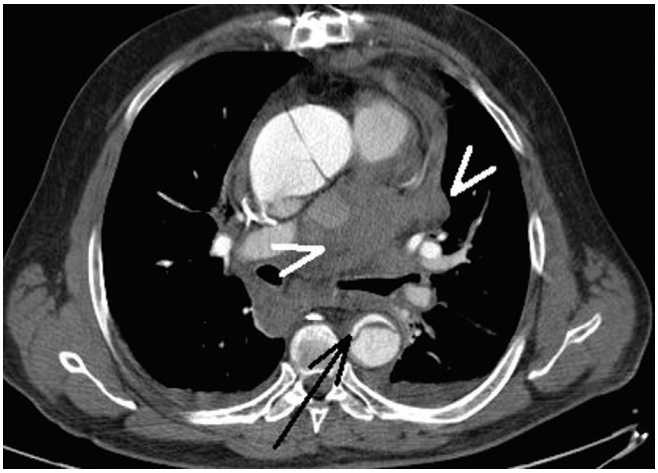

Figure 2. Contrast-enhanced axial CT scan shows bilateral minimal pleural effusion, mediastinal hemorrhage (arrowheads), and type A aortic dissection (black arrow). The true lumen is nearly completely collapsed (black arrow).

Discussion

Aortic dissection, especially when complicated, is fatal if left undiagnosed or untreated. Patients with suspected dissection of the thoracic aorta require prompt diagnostic evaluation so that urgent therapeutic interventions can begin [2]. Most of the cases of aortic dissection described in the literature have often been referred to as missed and not being timely diagnosed. In a retrospective review of 49 patients in Greece, almost a third of patients were initially admitted for other reasons [3]. However, as noted by Ramanath et al. in a very comprehensive review on acute aortic syndromes [4], "a key point for clinicians is that nearly 30% of patients later found to have AAD are initially diagnosed as having other conditions". As was the case in our patient as well, the severe acute renal failure was the initial diagnosis and the thought process that initially did not lead us to think about aortic dissection until the fall of the hemoglobin level.

With respect to the anuria and renal failure, aortic dissection is not something that is always considered and is still not a very common presentation unless both renal arteries come off the false lumen of the dissection [5]. However, in our case, only the left renal artery came off the false lumen of the dissection and resulted in kidney infarct, but CT showed complete collapse of the true lumen at the level of the renal arteries. In the literature, only a few cases have been reported regarding dissection presenting as renal failure and anuria [3,6-9]. However, when present, preoperative renal failure in patients with acute type B dissection was not-

ed to be an independent predictor of mortality [1,10]. On the contrary, our case was type A dissection, and mediastinal hematoma could be contributing to mortality. Although hemomediastinum due to type A acute aortic dissection may have caused acute simultaneous obstruction of the pulmonary artery and superior vena cava, leading to sudden death [11], there was no compression of the pulmonary artery and superior vena cava in our case due to mediastinal hematoma.

Several imaging modalities, including chest X-ray, transesophageal echocardiography, CT, magnetic resonance imaging, and conventional angiography, can be used in the emergency room [2]. Each of these diagnostic modalities has certain advantages and limitations. Helical CT is the most common initial diagnostic test performed when acute aortic dissection is suspected because it is commonly available in emergency departments and can be performed readily. CT enables the diagnosis of acute aortic dissection with a sensitivity and specificity of nearly 100% [12]. In 70% of cases with acute dissection, CT depicts an intimal flap. The signs of aortic rupture include hyperattenuating mediastinal, pericardial, or pleural fluid collection on unenhanced CT scans as well as irregularity of the aortic wall and extravasation of vascular contrast material on contrast-enhanced CT scans. CTA with multiplanar reformatting and 3-dimensionally reconstructed images can be used to evaluate the origins of major vascular branches and coronary arteries, as well as the extent of dissection. In addition, CT images provide information about all structures in the thoracic-abdominal cavity, making it easy to exclude the other pathologies that cause acute chest pain, such as pulmonary thromboemboli [2,12,13].

In conclusion, through the case, we highlight the importance of having type A aortic dissection as an important differential in patients presenting with anuria, and a lack of awareness of this atypical presentation may lead to a delay in diagnosing and cause fatal outcome.

Conflict of interest statement

The authors do not declare any conflict of interest or financial support in this study.

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