

# Acute Paraplegia as the Presentation of Aortic Dissection – A Case Report

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## ABSTRACT

A 74-year-old woman had a sudden onset of paraplegia after a 10 day history of back pain. She denied any recent trauma. Sensation to light touch and pinprick was decreased from T8 through S5. There was no pain, paresthesia, or skin pallor but cyanotic mottling of the skin was noted along with the paraplegia. Computed tomography (CT) scan of the chest revealed DeBakey type I aortic dissection with pericardial tamponade. There was a spiral intima within the lumen of the aorta from the aortic root to the bifurcation of the lower abdominal aorta. The lumen was almost completely thrombosed at the T11-L1 level. She underwent emergency operation but arrested after sternotomy. Cardiopulmonary resuscitation was not successful and she expired in the operating room. The neurological complications caused by dissection of the aorta may be explained by an understanding of the vascular supply to the spinal cord. Surgery is needed for aortic dissection involving the ascending aorta. We emphasize the importance of including acute aortic dissection in the differential diagnosis of acute paraplegia. (*Tzu Chi Med J* 2005; 17:369-371)

*Key words:* aortic dissection, paraplegia, shock

## INTRODUCTION

Acute aortic dissection usually presents as a sudden, painful, ripping sensation in the chest or back. More than 90% of the patients with acute aortic dissection complain of severe pain when they present in the emergency department [1]. This disease is associated with neurologic sequelae in as many as one third of patients. Painless dissection occurs in 5% of patients with acute aortic dissection [2]. It sometimes mimicks other events of vascular insufficiency, such as acute myocardial infarction, cerebral ischemia, and leg pain. The exact diagnosis may often be delayed. Here we report a patient with acute aortic dissection presenting with shock and paraplegia.

## CASE REPORT

A 74-year-old woman had been relatively healthy until about 10 days before her emergency room (ER) visit when she started to have pain in her lower mid-scapular area. She had no systemic diseases, such as diabetes or hypertension. On the morning of the visit, she had sudden onset of chest pain and felt dizzy. She fell and lacerated her scalp. On presentation to the ER, the patient was afebrile and nauseous, with a temperature of 35.5 °C, an initial blood pressure reading of 67/39 mmHg, a pulse rate of 72/min, and a respiratory rate of 16/min. She was weak but alert. On physical examination, her heart sounds were regular but distant. Her breath sounds were clear. Both radial pulses were weak. Her

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abdomen was soft, not tender, and not distended. There was no palpable pulsatile mass. Her muscle strength in the upper extremities was 5/5, but that of the lower extremities was 1/1. Deep tendon reflexes were absent from the waist down. Femoral pulsation was weak. Sensation to light touch and pinprick was decreased from the T8 through S5 dermatomes on both sides. She denied pain or paresthesia. The skin of the lower extremities showed

no pallor but was cyanotic and had a mottled appearance. The initial diagnostic evaluation included a chest radiograph (Fig. 1), which showed cardiomegaly and mediastinal widening with pulmonary congestion. The lumbar spine radiographs showed no evidence of pathological fracture. CT scan of the brain showed no definite brain lesion. CT scan (Fig. 2-4) of the chest showed a spiral intimal flap within the lumen of the aorta from

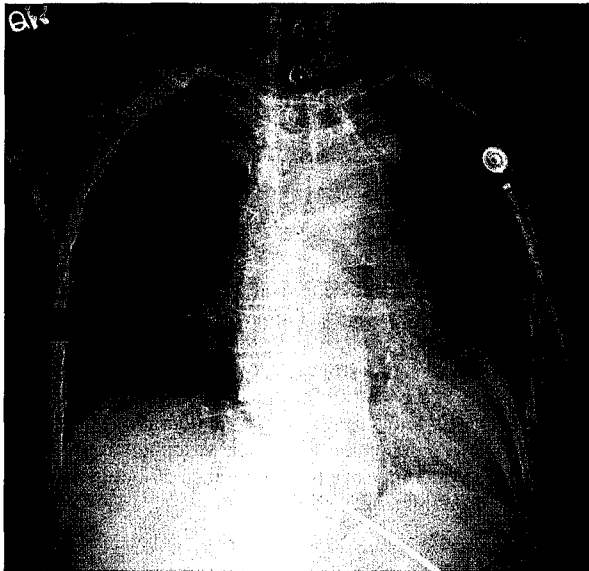


Fig. 1. Chest radiography shows cardiomegaly and right pulmonary artery engorgement (arrow). A widened mediastinum is also noted.

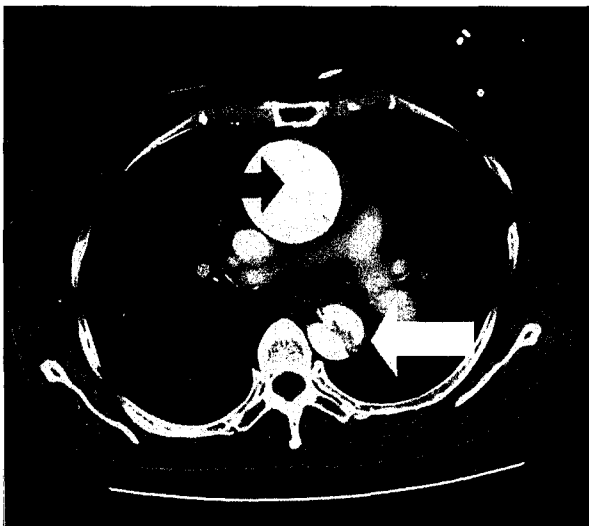


Fig. 2. A contrast-enhanced axial CT scan shows an intimal flap in the ascending thoracic aorta (black arrow) and descending thoracic aorta (white arrow). Type I aortic dissection is considered.

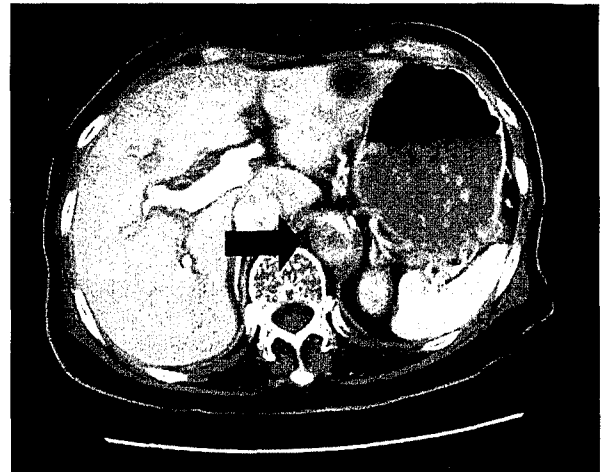


Fig. 3. An abdominal CT scan shows nearly total occlusion of the abdominal aorta. The true lumen is compressed by the false lumen and the false lumen is filled with thrombus.

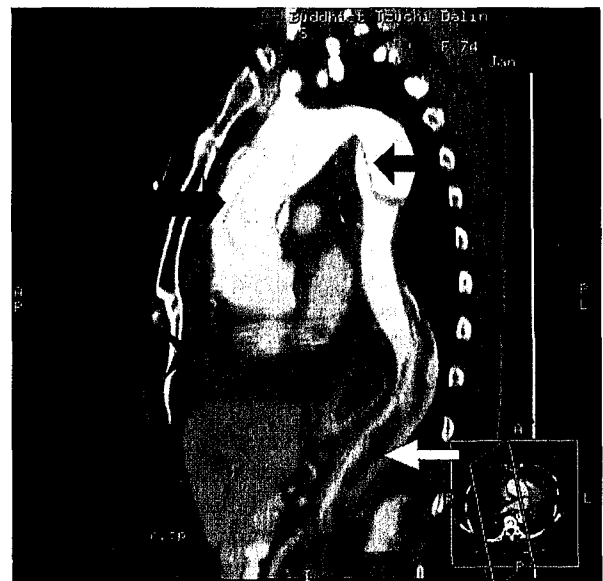


Fig. 4. An oblique sagittal reformatted CT image shows a pericardial hematoma (arrow head) and intimal flap (black and white arrows) extensions from the ascending aorta to the abdominal aorta. The white arrow shows the intimal flap with hematoma.

the aortic root to the bifurcation of the lower abdominal aorta. The lumen was almost completely thrombosed at the T11-L1 level. Hemopericardium was also noted. Her blood pressure was still about 87/50 mmHg after intravenous fluid and dopamine administration. Under the impression of type I acute aortic dissection with cardiac tamponade, she was sent to the operating room for an emergency aneurysm resection and ascending aorta reconstruction. However, she had a cardiac arrest after the sternotomy. Cardiopulmonary resuscitation failed and the operation was aborted. The operative findings included fresh blood and blood clots in the pericardial cavity with cardiac tamponade.

## DISCUSSION

Aortic dissection is uncommon. It accounts for approximately 1 in 10,000 hospital admissions. The mortality rate is as high as 80% without aggressive treatment [1]. The pathology in aortic dissection is a circumferential transverse tear of the intima. The tear often begins along the right lateral wall of the ascending aorta. Hypertension is considered the most important contributory factor.

The typical presentation is a severe painful tearing or ripping sensation. The painful area is usually located in the substernal, interscapular or mid-back area. Other signs and symptoms include cardiovascular collapse, acute myocardial infarction, heart failure, cardiac tamponade, oliguria, syncope, and cool mottled extremities.

The DeBakey classification divides dissections into 3 types. Type I involves the ascending aorta, aortic arch, and descending aorta. Type II involves only the ascending aorta. Type III involves the descending aorta distal to the left subclavian artery. Stanford classification Type A includes involvement of the ascending aorta and Type B excludes it [3].

The differential diagnosis of paraplegia includes spinal cord injury, tumor, infection, disc herniation, decompression illness, multiple sclerosis, and abdominal aortic occlusion [1]. The diagnosis of abdominal aortic occlusion in acute paraplegia is missed in up to 50% of cases. CT scan with contrast is a convenient diagnostic tool but angiography remains the gold standard. Transesophageal echography can be done when the above tools can not be used [4].

Neurologic sequelae of aortic dissection occur in as many as one third of patients. These sequelae fall into 3 categories: cerebral ischemia, ischemic peripheral neuropathy and spinal cord ischemia [1].

When the ascending aorta is involved, cerebral ischemia may result. Cerebral ischemia may present as a stroke or encephalopathy. When the iliac arteries are involved, a painful peripheral neuropathy may result. Paraplegia with or without sensory loss is a rare phenomenon. It occurs in about 2% to 8% of patients. It results from dissection of the descending aorta. The clinical picture of motor loss without complete loss of sensation is known as anterior artery syndrome.

The artery of Adamkiewicz branches from the posterior aspect of the aorta and supplies the anterior aspect of the spinal cord. When this artery is involved by the aortic dissection, most areas of the spinal cord receive additional blood flow from the collateral flow. In the thoracic spinal cord, there is a "watershed" area which is especially prone to ischemia [5]. Lesions of the ascending aorta (type I, type II or type A) have an unfavorable outcome and surgery is usually needed. Patients with Type III or type B dissections may be given medical management first.

From this case, we stress the importance of considering acute aortic dissection in the differential diagnosis of acute paraplegia. The cause can be either acute abdominal aorta occlusion or acute spinal cord ischemia due to dissection of the abdominal aorta.

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