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Case Report

Monoplegia and paresthesia as rare presentations of type B aortic dissection

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ABSTRACT

Aortic dissection is a cardiovascular emergency, and the management remains a challenge for physicians because of the abrupt symptoms and rapid process. Acute neurological complications caused by descending aortic dissection, especially monoplegia, are rarely manifested. Herein, we present a 24-year-old man with Type B aortic dissection with acute onset of abdominal pain, accompanied by weakness and numbness only in the right lower extremity. After injection of contrast medium, computed tomography of the thorax and abdomen confirmed a diagnosis of Type B aortic dissection with the false lumen from the suprarenal descending aorta to the right common iliac artery. The monoplegia and paresthesia in the right lower extremity may have resulted from occlusion of the right common iliac artery because of the intimal flap. The detailed physical examination with absent pulsation of the right dorsalis pedis artery and right femoral artery, isolated low blood pressure and low motor neuron dysfunction of the right lower extremity, and abdominal/chest computed tomography were the key points for the correct diagnosis in our patient.

1. Introduction

Aortic dissection is a lift-threatening disease with a high mortality and morbidity. Variant clinical manifestations that occur abruptly and progress rapidly make the clinical diagnosis challenging. Aortic dissection is categorized as Type A when the ascending aorta is involved and Type B when the aorta distal to the left subclavian artery is involved [1]. Tearing pain localized in the chest and back is the most common symptom in patients with Type B aortic dissection, which rarely results in acute neurological symptoms, such as paraparesis, paraplegia, and monoplegia [2]. Herein, we report a patient with Type B aortic dissection manifested by acute abdominal pain and weakness and numbness only in the right lower extremity.

2. Case report

A 24-year-old man diagnosed with Marfan's syndrome complained of sudden onset of abdominal pain accompanied by numbness and inability to move his right lower limb after drinking some wine (1 oz). He had a history of aortic insufficiency and had undergone an aortic valve replacement 2 years previously. He took no medication other than aspirin for postoperative management. When he arrived in the emergency department by ambulance, he was alert and oriented with a blood pressure of 185/72 mmHg, pulse of 86 beats/min, respiration rate of 19/min, and temperature of 36.1°C. On physical examination, a tender point was noted in the epigastric region with no bruits or pulsatile mass. The skin color and temperature of the right lower extremity were equal to those of the left lower extremity. The right dorsalis pedis artery and right femoral artery could not be palpated. Neurological examination revealed a decrease in pain and temperature sensation and deep tendon reflexes in the right lower limb with a muscle power score of 0/5. Blood pressures in the four limbs were 143/65 mmHg in the right upper limb, 131/55 mmHg in the left upper limb, 102/56 mmHg in the right lower limb, and 170/57 mmHg in the left lower limb. The laboratory examination showed no abnormalities. Electrocardiography showed normal sinus rhythm. Chest radiography showed normal lung fields, a normal mediastinum, and postoperative wiring. Because of the patient's symptoms and neurological signs, aortic dissection was highly suspected. Sonography of the abdomen was performed in the emergency department, followed by contrast-enhanced computed tomography (CT) of the thorax, abdomen, and pelvis. These results showed an intimal flap that originated in the descending aorta, resulting in

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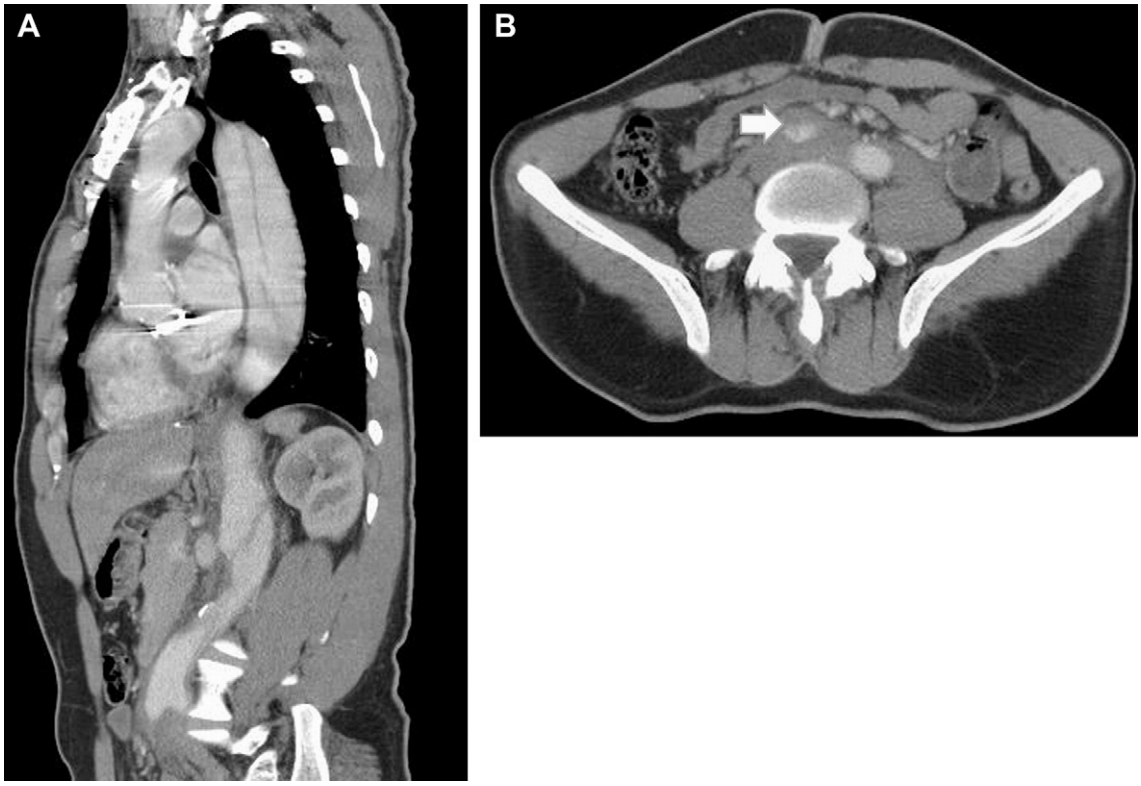

Fig. 1. Computed tomographic scans of the chest and abdomen. (A) The sagittal image reveals an intimal flap in the descending aorta. (B) The axial image reveals occlusion of the right common iliac artery with an intimal flap (white arrow).

obliteration of the right common iliac artery (Figs. 1A and 1B). The diagnosis of Type B aortic dissection with obliteration of the right common iliac artery was confirmed. After the condition was explained to the patient, conservative treatment with antihypertensive and analgesic medication was given. The neurological deficits, including monoplegia and paresthesia in the right lower extremity, uneventfully improved on Day 2 of hospitalization.

3. Discussion

Aortic dissection is a catastrophic disease and remains a challenge for emergency physicians. The estimated incidence is approximately 5–30 cases per million people per year [3]. According to the Stanford classification system, Type B aortic dissection involves the appearance of a false lumen that is formed by a tear in the intimal layer distal to the left subclavian artery and extending distally into the descending thoracic aorta and abdominal aorta [1]. Systemic hypertension, atherosclerosis, cystic medial necrosis, pregnancy, a bicuspid aortic valve, coarctation of the aorta, autoimmune disorders, connective tissue disorders (Marfan's syndrome), and even traumatic events are considered common predisposing factors [2,4–6]. Aortic dissection affects a wide range of patients at an average age of about 60 years with a male-to-female ratio of 3:1 [6].

Tearing chest pain that may radiate to the back or abdomen, accompanied by nausea, cold sweats, and difficulty in breathing, is the typical clinical presentation of aortic dissection [4,5]. Acute neurological symptoms, including syncope, alteration in consciousness, paraplegia, paraparesis, paresthesia, hoarseness, and Horner's syndrome, have been described as infrequent manifestations and occur in 3–5% of patients with descending aortic dissection [2,4,6]. However, monoplegia secondary to aortic dissection is rarely discussed. Sato et al [2] reported that only 1 of 36 patients with Type B aortic dissection (2.9%) presented with peripheral monoplegia. The possible pathophysiological mechanism may be associated with hemodynamic changes secondary to aortic dissection, resulting in ischemic necrosis of the spinal cord or peripheral nerves [6,7]. It is hypothesized that transient paralysis in the lower extremities occurs because of hypoperfusion of the spinal cord, especially in the lower thoracic and upper lumbar regions [5]. Peripheral ischemic neuropathy as a result of vascular occlusion is the most likely cause of weakness and numbness in a unilateral lower extremity [6]. However, a detailed physical examination specifically investigating pulsation of the peripheral arteries is the keystone to differentiate vascular neuropathy from pure spinal cord disorders. Because the symptoms of aortic dissection mimic myocardial infarction, cholelithiasis, pancreatitis, and renal colic, an early diagnosis is essential for this lethal disease. Previous reports show a low rate of correct diagnosis of aortic dissection (18%), but advanced and noninvasive imaging techniques, such as CT, transesophageal echocardiography, and magnetic resonance imaging can provide more accurate and prompt information [2]. Although these have similar sensitivities and specificities ranging from 95% to 100%, CT seems to be the best choice for emergency confirmation [4].

Medical treatment with a beta blocker is generally recommended for Type B aortic dissection, except with complications, such as rupture, distal ischemia, visceral ischemia, renal compromise, intractable pain, uncontrollable hypertension, extension of the dissection, and enlargement of the false lumen [1]. The survival rate in medically treated Type B patients ranges from 92% to 94.4% [2]. A high mortality rate has been associated with complications, such as shock and malperfusion [8].

Although sudden onset of severe abdominal pain is the typical presentation of aortic dissection in patients with Marfan's syndrome, our patient also presented with the rare symptoms of monoplegia and paresthesia. Lack of pulsation in the right dorsalis

pedis artery and right femoral artery and a decrease in pain and temperature sensation and deep tendon reflexes in the right lower limb with a muscle power score of 0/5 indicated peripheral ischemic neuropathy. An intimal flap that originated in the descending aorta resulting in the obliteration of the right common iliac artery was characteristically shown on CT. The weakness and numbness in the right lower extremity may have resulted from ischemia of the distal branch of the femoral and sciatic nerves or spinal cord when the intimal flap occluded the flow of the right common iliac artery.

In conclusion, because of the variant clinical presentations of acute aortic dissection, a detailed history, physical examination, and advanced imaging techniques are essential for an early diagnosis and prompt treatment. Hence, acute aortic dissection should be included in the differential diagnosis in patients with symptoms of acute abdominal pain, monoplegia, and paresthesia.

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