Aortic intramural haematoma associated with pulmonary artery periadventitial haematoma

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DESCRIPTION

A 54-year-old man who has a medical history of untreated hypertension presented to the emergency department with sudden onset of back pain and sweat. His back pain suddenly started while he was washing the dishes. The pain was sharp, continuous and radiating to his chest. His vital signs were normal and physical examination revealed neither heart murmur nor pulse deficit. Laboratory test revealed elevated D-dimer level of 2.5 µg/mL (reference range <0.5 µg/mL), but normal troponin-T level. Electrocardiography was normal. Chest X-ray showed widened mediastinum.

Non-contrast enhanced and contrast-enhanced CT was obtained. Non-contrast enhanced CT showed crescentic high attenuation sign along the aortic wall from the ascending to the descending aorta (figure 1), whereas contrast-enhanced CT showed a hypopattenuating aortic wall, with no evidence of dissection (figure 2). The haematoma was extended along the aortopulmonary connective sheath (figure 3). The patient was transferred to the tertiary hospital and underwent the replacement of ascending aorta. He had an uneventful postoperative course.

Aortic intramural haematoma (IMH) is a subtype of acute aortic syndrome. IMH is distinguished from aortic dissection (AD) in the point of intimal tear exists or not. IMH accounts for 10%–25% of acute aortic syndrome.1

CT findings of IMH is crescentic or circular aortic wall hyperattenuation in non-contrast enhanced CT. The CT protocol for the evaluation of acute aortic syndrome should also include non-contrast enhanced CT.

Pulmonary artery periadventitial haematoma is a rare complication of IMH. Because ascending aorta and pulmonary trunk have a common adventitia at the root of the great vessels, blood from ruptured IMH in ascending aorta can extend along the pulmonary artery. Investigators reported the periadventitial haematoma may compress pulmonary artery and restrict the blood flow of pulmonary artery, mimicking pulmonary embolism.2

The treatment strategy for IMH is decided based on Stanford Classification and complication such as cardiac tamponade and organ ischaemia. Because patients with type A IMH can develop AD, aortic rupture or aortic aneurysm, the mortality

Figure 1 Axial non-contrast enhanced CT showed circular aortic wall hyperattenuation in ascending aorta (arrows) and displacement of intimal calcifications (arrowhead).

Figure 2 Axial contrast-enhanced CT did not show any intimal tear and contrast agent outpouching, but haematoma around the pulmonary artery was detected (arrows).

Figure 3 Sagittal contrast-enhanced CT scan showed a haematoma extended along the aortopulmonary connective sheath (arrows).
of patients with type A IMH treated medically is high, about 40%. Surgical management, which aims to prevent the progression, clearly reduces the mortality compared with non-operative management, so generally, operative management is indicated for the type A IMH. The patients who are haemodynamically unstable or have complications such as tamponade or impending rupture need timely surgery. If the patient is stable and has no complications on arrival, some CT features such as maximum aortic diameter ≥50 mm and maximum aortic wall thickness ≥11 mm are reported as predictors of the progression, so timely surgery is recommended in these patients.

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