Aortic penetrating ulcers associated with intramural haematoma: detection and evaluation by multislice computed tomography

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A 76-year-old woman was admitted to the Cardiology ward because of chest pain. She had a history of poor controlled arterial hypertension. Two-dimensional echocardiography showed a dilated ascending aorta without signs of intimal tears. The aortic valve showed normal function. There were no signs of pericardial effusion, and wall motion of the left ventricle was normal. Laboratory tests did not show abnormalities. To evaluate the coronary arterial tree and the ascending aorta, a 64-multislice computed tomography (MSCT) scan was performed within few hours using a low-dose X-ray protocol during prospective acquisition (SnapShot Pulse, GE Healthcare). The pre-contrast scan showed the presence of a crescent-shaped high-attenuation material within the wall of the ascending aorta on unenhanced images (Panel A, arrows), which is a typical sign of intramural haematoma (IMH). After contrast, a thickening of the aortic wall from the aortic valve to the middle portion of the arch was noted (Panel B, arrows). Careful examination of the aortic lumen showed the presence of two small indentations of the otherwise smooth aortic wall lumen located in the inferior wall of the aortic arch (Panels C and D dark arrows), suggesting the presence of two penetrating ulcers (PAU). No intimal flap was documented. The coronary arterial tree did not show any significant lesion. The patient underwent immediate surgery and the ascending aorta replaced with a dacron graft and the native aortic valve spared. She experienced an uneventful recovery and is doing well.

Penetrating ulcers, a condition in which ulceration of an aortic atherosclerotic lesion penetrates the internal elastic lamina into the media, usually involves the descending thoracic aorta. Although IMH and PAU are considered two different and distinct entities, they may co-exist and PAU has been suggested to be a cause of IMH. Their combination has been associated with a progressive and unfavourable clinical course. As a definite diagnosis is relevant for the outcome and a clinical separation of the two entities is not possible, the differentiation is based on the appropriate use of the imaging methods. The complete, high-resolution assessment of the aorta and coronary arteries that can be obtained with the current MSCT technology at present favours this method compared with other imaging modalities in the suspicion of an acute aortic syndrome.

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