Case report - Cardiac general

Sub-acute intramural haematoma of the ascending aorta

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Abstract

We report the case of an ascending aorta aneurysm with intramural haematoma (IMH) in a patient with severe hypotension without history of thoracic pain or hypertension. Computed tomography angiography (CTA) and magnetic resonance angiography (MRA) demonstrated the presence of subacute IMH and also revealed sacciform aneurysm of the aortic arch. The patient refused hospitalization and one week later he underwent emergency aortic replacement for dissection. CTA is the technique of choice in acute aortic syndrome and magnetic resonance is helpful in IMH detection and age determination.

Keywords: Intramural haematoma; Acute aortic syndrome; Ascending aorta; Magnetic resonance

1. Case report

A 69-year-old patient was studied in our department for an ascending aorta thrombus which had been investigated for severe hypotension one week previously in the emergency room. There was no history of thoracic pain or hypertension. Pre-contrast computed tomography (CT)-scan (Fig. 1a) showed a dilated ascending aorta (50 mm) with isodense wall thickening; the presence of a small intimal calcification displaced inside the aortic lumen (arrowhead) is more suspicious than intramural haematoma (IMH). Usually acute IMH is seen as hyperdense on a CT-scan; the isodensity in our examination could be due to the subacute stage. A moderate pericardial effusion was also observed (Fig. 1b). The patient refused iodinated medium contrast administration due to previous reaction history.

In order to better characterize the finding and demonstrate the presence of intramural blood, the patient underwent magnetic resonance (MR) examination. Magnetic resonance angiography (MRA) confirmed the ascending aorta aneurysm with associated sacciform aneurysm of the proximal arch (Fig. 2a,b, arrowhead) just behind the common trunk origin. The T1 weighted image (Fig. 2c) with fat suppression demonstrated a circumferential aortic wall thickening in the absence of dissection or intimal flaps. It also revealed a high signal intensity of the aortic wall suggestive of sub-acute haematoma, considering that the blood signal intensity evolves over time as oxyhaemoglobin is converted to methaemoglobin and results in a substantial isointensity in acute phase and hyperintensity in the subacute phase. The T2 weighted image (Fig. 2d) confirmed the aortic wall hyperintensity and was also suggestive for haematoma. The final diagnosis was ascending aorta aneurysm with sub-acute IMH and associated arch aneurysm.

The patients refused hospitalization for surgical intervention and was discharged; one week later he underwent emergency aortic replacement for dissection. Intraoperative examination confirmed the presence of IMH without evidence of intimal dissection. Surgical intervention was successful without postoperative complications.

2. Discussion

IMH is a severe aortic disease consisting in intramural thrombus caused by rupture of vasa vasorum in the absence of intimal tear. IMH is encompassed in acute aortic syndrome (AAS), and its prevalence in AAS is about 5.1–20%,
Fig. 2. (a, b) MR angiography showed an ascending aorta aneurysm with associated proximal arch sacciform aneurism (arrowhead) just behind the common trunk origin. (c) T1 weighted image with fat suppression revealed an high signal intensity of the aortic wall suggestive for sub-acute hematoma. (d) T2 weighted image confirmed the aortic wall hyperintensity suggestive for haematoma.

especially in old males [1, 2]. In IMH, the rupture of medial layer is considered the initial process of development of IMH, accumulation of blood inside media can facilitate the development of intimal fracture or sub-adventitial hematoma. The most important risk factor in developing IMH is hypertension [1, 3] followed by Marfan syndrome [3], Turner’s syndrome, cocaine abuse and blunt or iatrogenic trauma. IMH is generally classified for treatment according to Stanford system in types A and B. Imaging techniques comprise trans-oesophageal echocardiography, computed tomography angiography (CTA) and MRA. CTA is the technique of choice for spatial resolution and examination time; CTA with cardiac synchronization offers 82% sensitivity and 100% specificity [4], and it is very useful in the detection of small intimal tears. MRA permits serial controls and the determination of haematoma’s age based on intensity of the T1 and T2 signal [3, 5].

References


eComment: Diagnostics and intramural hematoma treatment

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We read with interest the article on the successful diagnostic and treatment of this difficult and rare pathology [1]. Aortic intramural haematoma (IMH) has been accepted as an increasingly recognised and potentially fatal entity of acute aortic syndrome with acute mortality and rapid progression. Though IMH was first described in 1920 as ‘dissection without intimal tear’, it was rarely recognized in the clinical setting before the advent of high-resolution imaging modalities. Non-invasive radiological techniques, CT and MRI, were first used for the diagnosis of IMH – ‘aortic dissection without intimal rupture’. The diagnosis of IMH relies on the visualization of intramural blood manifested as a localized aortic wall thickening. The unenhanced CT is the most simple and a fast method for the diagnosis of IMH. Several investigators have attempted to assess the usefulness of CT findings for predicting the progression of aortic IMH to overt dissection, such as IMH type A, aortic diameter of more than 50 mm, thick haematoma with compression of the false lumen, and pericardial or pleural effusion [2, 3].

However, we agree with the authors [1] that compared to different imaging modalities, MRI demonstrated the best sensitivity in the detection of IMH. Moreover, MRI is the only imaging method that may allow the assessment of the age of hematoma on the basis of the different degradation products of hemoglobin. Indeed, IMH may represent a phase in the evolution of these other highly morbid conditions; the progression of IMH to overt dissection and rupture of an aorta has been reported in 32–80% of cases, particularly with the involvement of ascending aorta. And in our opinion, acute phase, instability of the hematoma and recurrent bleeding, which can be detected by MRI, are important parameters to assess the need for emergency surgical repair.

References

