

## An unusual cause of abdominal pain seen in the emergency room: isolated dissection of the abdominal aorta in a patient with disseminated tuberculosis

急症室一個不尋常的腹痛原因：一名有擴散性結核病人的單一性腹主動脈內壁分離

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Isolated abdominal aortic dissection is rare and usually associated with atherosclerosis, hypertension and cigarette smoking. Herein, we report a 35-year-old male patient with isolated abdominal aortic dissection that was associated with disseminated tuberculosis. To our knowledge, this association has not been reported previously. (*Hong Kong j.emerg.med.* 2010;17:265-268)

單一性的腹主動脈內壁分離是罕見的，通常與動脈粥樣硬化，高血壓及吸煙有關。本文在這裡報告一名 35 歲男子與擴散性結核病有關的單一性腹主動脈內壁分離。據我們所知，這關聯以往沒有被報導過。

**Keywords:** Aorta, dissecting aneurysm, tuberculosis

**關鍵詞：**主動脈、壁間動脈瘤、結核病

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### Introduction

Isolated abdominal aortic dissection (IAAD) is rare and usually associated with atherosclerosis, hypertension and cigarette smoking.<sup>1</sup> Herein, we report a 35-year-old male patient with IAAD that was associated with disseminated tuberculosis (TB). To our knowledge, this association has not been reported previously.

### Case report

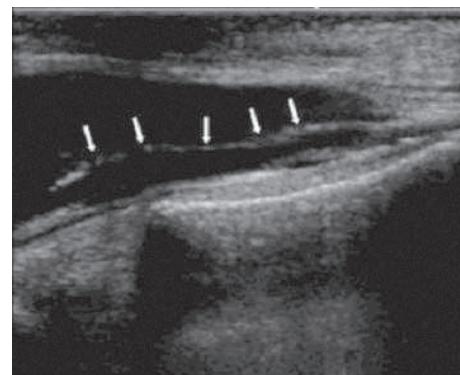
A 35-year-old man presented to our emergency department with severe abdominal pain and low-grade fever in April 2007. The abdominal pain increased during the last two days. At admission, the physical examination revealed abdominal tenderness without guarding. Basic laboratory tests were unremarkable. At abdominal ultrasonography, dissection of the

abdominal aorta just beyond the level of the renal arteries without aneurysmal dilatation was seen (Figures 1 & 2). The patient denied any significant recent or remote trauma and had not undergone any vascular intervention. In addition, he had no known risk factors for dissection including atherosclerosis, hypertension and cigarette smoking. At contrast-enhanced magnetic resonance angiography, the dissecting membrane was shown to extend into the right common iliac artery (Figure 3). The suprarenal abdominal aorta was normal. The upper abdominal organs and retroperitoneal space were normal, with no sign of para-aortic disease. Also noted was moderate pericardial effusion (not shown). Thereafter, he was evaluated by a cardiovascular surgeon. Based on the clinical status, physical examination and imaging findings, the dissection was deemed to be chronic in nature and no surgical intervention was performed. The chest X-ray revealed right-sided pleural effusion and ill-defined right apical opacities (Figure 4). At thoracic computed tomography, the right apical infiltration and pleural effusion were confirmed (Figures 5 & 6). The thoracic aorta was normal with no apparent dissection (Figure 6). Eighteen hours after admission, the patient developed sudden loss of consciousness, vomiting and severe headache. Magnetic resonance imaging of the head was ordered which revealed diffuse meningeal enhancement consistent with meningitis (Figure 7). Subsequently, lumbar puncture was performed. Polymerase chain reaction analysis of the cerebrospinal fluid (CSF) tested positive for *Mycobacterium tuberculosis*. Cultures of CSF also grew *Mycobacterium tuberculosis*. Based on these findings, the diagnosis of disseminated tuberculosis with central nervous system and abdominal aortic involvement was made. Thereafter, antituberculosis treatment including rifampicin (600 mg/day), morphazinamide (3000 mg/day), streptomycin (1000 mg/day), and isoniazid (400 mg/day) was begun. After a 2-month period of hospitalisation, the patient was discharged with significant clinical improvement. Antituberculosis treatment was continued for one year. As for two years of clinical follow-up, the patient remained well.

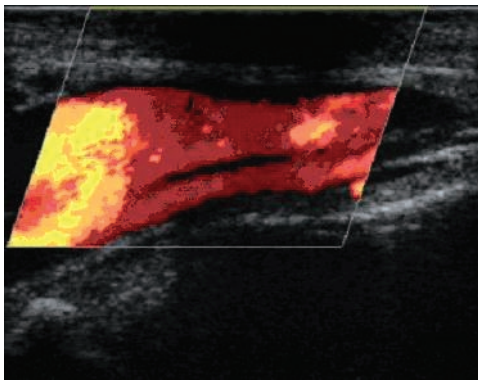
## Discussion

Aortic involvement by TB is invariably indicative of disseminated TB. Tubercle bacilli may reach the aortic wall in one of three ways: (1) the bacilli may implant directly on the internal surface of the vessel wall, generally seen in patients with atherosclerosis; (2) the bacilli may be carried to the adventitia or media by the vasa vasorum; and finally, (3) involvement of the vessel wall may occur by direct extension from a contiguous focus such as a lymph node or paraspinal abscess.<sup>2</sup> The presence of disseminated tuberculosis and the absence of para-aortic disease strongly suggested haematogeneous spread of tubercle bacilli as the aetiologic factor for the IAAD in the present case.

IAAD is rare and may develop secondarily to surgical or endovascular interventions. Traumatic and spontaneous cases of IAAD have also been reported. Although two case reports of dissection of the thoracic aorta secondary to tuberculosis have previously been reported,<sup>3,4</sup> to our knowledge, our case is the first in which tuberculosis was associated with IAAD. The natural history of IAAD is not well established because of the rarity of the condition and its association with a broad range of clinical presentations and anatomic findings. Treatment risk in IAAD is significantly less



**Figure 1.** Longitudinal sonogram of the distal abdominal aorta revealing a dissecting membrane (arrows) dividing the aorta into two channels.



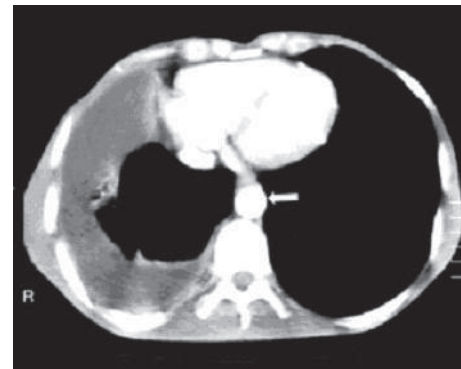
**Figure 2.** Longitudinal power Doppler sonogram showing flow in both channels.



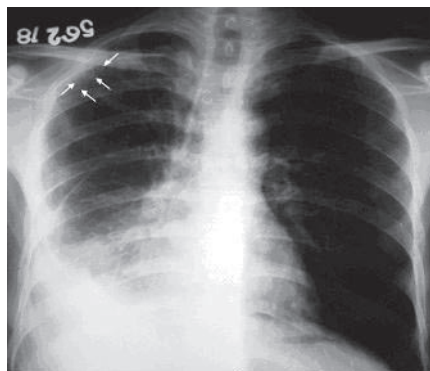
**Figure 5.** CT of the thorax with parenchymal window settings showing an infiltration in the posterior aspect of the right upper lobe (arrow) suggesting tuberculosis.



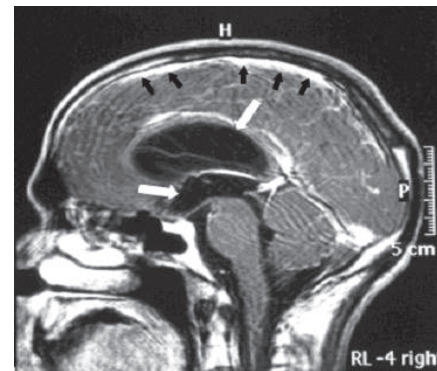
**Figure 3.** Coronal contrast-enhanced maximum-intensity projection MR angiogram revealing the dissecting membrane in the distal abdominal aorta (single arrow) that extends into the right external iliac artery (arrows). Note that the diameter of the abdominal aorta is within normal limits with no aneurysmal dilatation.



**Figure 6.** Contrast-enhanced CT of the thorax with mediastinal window settings showing right-sided pleural effusion. The thoracic aorta is normal with no apparent dissecting membrane (arrow).



**Figure 4.** Chest X-ray revealing poorly defined, inhomogeneous increased density in the right upper lobe (arrows), with right-sided pleural effusion.



**Figure 7.** Sagittal T1-weighted contrast-enhanced cranial MR image revealing diffuse meningeal enhancement (black arrows) and hydrocephalus (white arrows).

than that for descending thoracic aortic dissection. The reasons for intervention in patients with IAAD include aortic rupture, lower extremity ischemia, unremitting pain, associated aortic aneurysm, and prevention of future aneurysmal degeneration. As our patient improved significantly with anti-TB treatment and imaging studies did not reveal any progression in the appearance of the IAAD during the follow-up period, no surgical or endovascular intervention was performed.

In conclusion, the presented case shows that tuberculosis should be considered in the differential diagnosis of patients who present with IAAD.

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