

Reminder of important clinical lesson

Bilateral common carotid artery dissection

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A 63-year-old Japanese man with no significant medical or family history was admitted for sudden consciousness disturbance, left hemiparesis and shock. Physical examination showed internal carotid artery asymmetry on palpation and significant differential blood pressure in both upper arms. A thoracic CT scan showed classic aortic dissection from the ascending aorta through the common iliac artery, classic dissection of the left common carotid artery and an intramural haematoma in the right common carotid artery. The patient's consciousness level gradually improved, and he underwent emergency surgery involving aortic rebuilding with a synthetic graft. Subsequently, he had a good clinical course.

BACKGROUND

Dissection of the common carotid artery is frequently associated with aortic dissection. Bilateral carotid artery dissections are rare and have unknown prevalence; in addition, they may cause hemiplegia and altered mental status, thereby hindering their early diagnosis.

CASE PRESENTATION

A 63-year-old man with no significant medical and family history was admitted to the emergency room for sudden consciousness disturbance and left hemiparesis. On admission to the emergency department, his body temperature was 36.4°C; pulse rate, 82 beats/min; blood pressure, 110/60 and 65/31 mm Hg for the right and left arms, respectively; and the Glasgow Coma Scale score was 4/15 (eyes, 1; verbal, 1; and motor, 2). On examination, internal carotid artery asymmetry was evident on palpation. Further clinical examination showed isolated twitching of the right arm and incontinence. Heart murmur, chest rales and tongue biting were absent.

INVESTIGATIONS

Thoracoabdominal contrast CT showed classic aortic dissection from the ascending aorta through the common

iliac artery (figure 1A), classic dissection of the left common carotid artery and an intramural haematoma in the right common carotid artery (figure 1B). The patient's consciousness level gradually improved over 30 min; he experienced anterior chest and back pain but not paralysis. He underwent emergency surgery involving aortic rebuilding with a synthetic graft and had a good clinical course. On day 21, the patient was discharged without complications.

DISCUSSION

Aortic dissection can occur by two possible mechanisms¹ (figure 2). The classic mechanism is an intimal tear, which is usually transverse and extends through the very thin tunica intima into the tunica media. Blood enters a layer of the media under pulsatile pressure, resulting in longitudinal dissection, usually in a distal direction. The other major mechanism is rupture of the vasa vasorum, usually of a penetrating branch within the tunica media, with consequent bleeding into the media. Progression then occurs in the same fashion, either with or without secondary tearing through the intima into the aortic lumen. The aorta usually tears near tethering points, where the vessel undergoes the greatest flexion stress

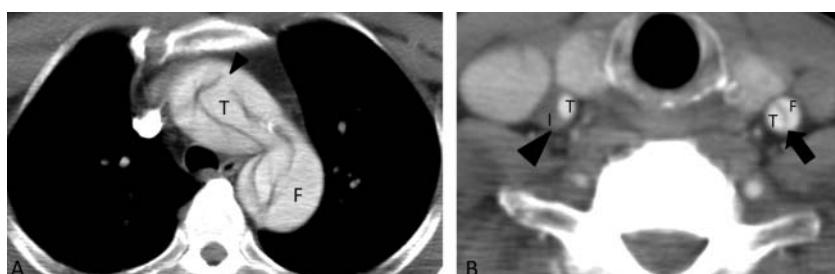


Figure 1 (A) Axial image through the thorax shows the initial dissection flap in the aortic arch (arrowhead). (B) Classic dissection of the left common carotid artery (arrow) was seen together with an intramural haematoma in the right common carotid artery (arrowhead). T, true lumen; F, false lumen; I, intramural haematoma.

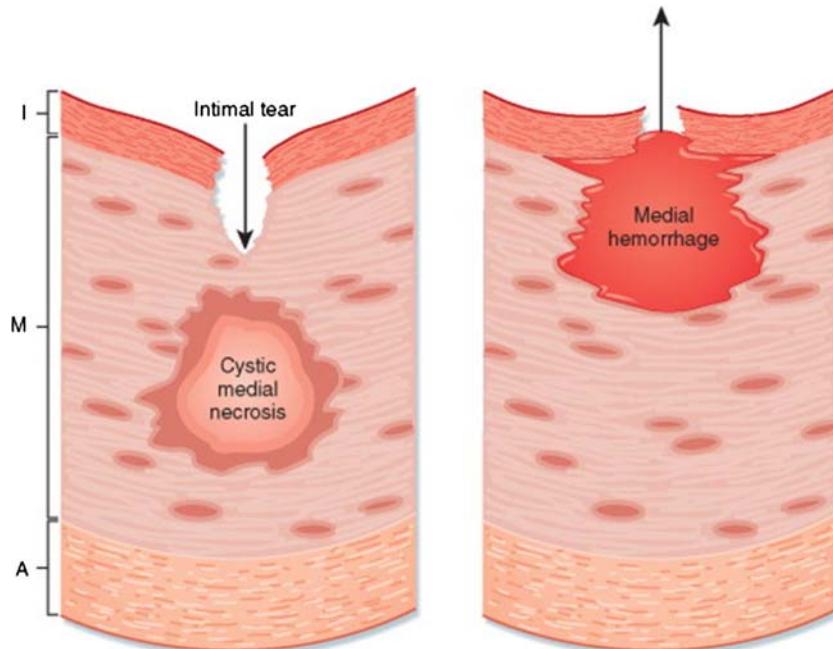


Figure 2 Two mechanisms for aortic dissection. A, adventitia; I, intima; M, media.

during cardiac contractions. Thus, the most common location of dissection initiation is the first few centimetres of the ascending aorta, with the next most common being the origin of the descending aorta, just distal to the left subclavian artery.²

Dissection of the common carotid artery is frequently associated with aortic dissection,³ but bilateral carotid artery dissections are rare and have unknown prevalence.⁴ Syncope occurs early in aortic dissection in approximately 9% of cases and may be the sole presentation in some patients.^{5,6} It most often heralds dissection into the pericardium, causing pericardial tamponade, but may occur because of transient interruption of blood flow to the cerebral vasculature, as in our case. Neurological symptoms such as focal weakness or mental status changes occur in up to 17% of cases.^{5,7} Overlooking aortic dissection during thrombolytic therapy for patients with acute stroke leads to poor outcomes.

Routine laboratory tests are of little value in diagnosing aortic dissection; recently, however, there has been increasing interest in the biochemical diagnosis of acute aortic dissection.⁸ Myosin heavy-chain concentrations, D-dimer levels⁹ and soluble elastin fragment concentrations are some of the newer tools that may help diagnose aortic dissection. Prospective clinical trials to evaluate their usefulness are pending. A recent meta-analysis found that D-dimer level assessment exhibited 97% sensitivity for aortic dissection.¹⁰ However, that assessment requires careful attention, because D-dimer levels also increase in cases of disseminated intravascular coagulation, deep vein thrombosis, pulmonary emboli, cancer, myocardial infarction, pregnancy and sepsis.^{11,12}

In conclusion, early identification and management of dissection as a cause of ischaemic stroke is important while treating patients in shock.

Learning points

- The aggressiveness of screening for aortic dissection in patients who are in shock and exhibit neurological abnormalities should be further evaluated.
- D-dimer-level assessment has 97% sensitivity for aortic dissection.
- Dissection of the common carotid artery is frequently associated with aortic dissection, but bilateral carotid artery dissections are rare.

Competing interests None.

Patient consent Obtained.

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