Ischaemic infarction masking aortic dissection: a pitfall to be avoided before thrombolysis

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Acute aortic dissection complicated by stroke is not uncommon but may be difficult to evaluate, especially in patients with impaired mental status. We report a patient who had evidence of an ischaemic stroke but was fortuitously not given thrombolytic treatment. She was subsequently found to have an extensive aortic dissection involving both carotid arteries. The decision of whether to give thrombolytic treatment is understandably an urgent one, but careful attention should be paid to subtle signs and symptoms such as atypical chest pain and carotid bruits that might suggest aortic dissection, especially involving the carotid arteries. There should be a high index of suspicion for acute aortic dissection in such cases and a low threshold for performing carotid ultrasound.

Thrombolytic treatment is an effective management for ischaemic stroke when given within 3 h of the onset of symptoms. Before thrombolysis is undertaken, however, care must be taken to exclude patients at high risk for haemorrhagic complications. One such condition, acute aortic dissection, may significantly confuse the picture. Neurologic deficits reportedly occur in 18–30% and cerebral ischaemic stroke in 5–10% of patients with aortic dissection.¹ Carotid artery dissection may occur in about 15% of cases of aortic arch dissection and may be an underestimated cause of cerebral infarction.

CASE REPORT

A 56-year-old woman was talking with friends when she suddenly lost consciousness for 10 min, an event preceded by a brief episode of convulsive limb movements. Some vague complaints of chest tightness were noted after she regained consciousness. Her past medical history was unremarkable. On arrival in the emergency room 30 min after the onset of syncope, her temperature was 36°C, blood pressure 130/76 mm Hg, and heart rate 82 beats/min. She was drowsy and confused, and her eyes deviated to the right. There was left hemiplegia with a Babinski sign on the left. Laboratory results, including electrocardiogram, cardiac enzymes, and chest x ray, were within normal limits. The patient's National Institute of Health stroke score was 18. Head computed tomography (CT) revealed subtle sulcal effacement in the right middle cerebral artery territory. The findings at that point were consistent with ischaemic stroke, possibly amenable to treatment with intravenous recombinant tissue plasminogen activator. However,

thrombolytic treatment was withheld because of the seizure-like activity at the onset of her event.

She subsequently again complained of chest pain about 4 h after the onset of syncope, at which point chest CT and CT angiography were performed, revealing a Stanford A aortic dissection extending from the ascending to the descending aorta and involving both common carotid arteries (fig 1). Carotid ultrasound demonstrated intimal flaps and false lumens in both common carotid arteries, extending to the proximal internal carotid arteries bilaterally. Repair of the aorta was deferred because of the high surgical morbidity and mortality in patients with type A aortic dissection complicated by a cerebral infarction.

The patient's blood pressure was tightly controlled with a β -blocker and the intracranial pressure reduced by giving mannitol. She remained semi-comatose for a period of time, requiring mechanical ventilation. However, she was eventually successfully extubated, and her neurologic status gradually improved. One month after the event, she was left with only mild left hand numbness and weakness. She refused surgery for the aortic dissection. At 6 and 12 months, carotid ultrasound and chest CT showed no evidence of progression of the dissection.

DISCUSSION

Our patient presented with a right middle cerebral artery infarction well within the 3 h time window considered optimal for administration of thrombolytic treatment. She was not given the treatment, however, because of a suspected seizure at the onset of her symptoms. It was only later that we discovered her extensive aortic dissection. Had she been given thrombolytic

treatment, the results might have been disastrous.²

The patient had a vague history of chest pain, but there was no evidence of myocardial infarction. Atypical chest pain should be evaluated carefully in stroke patients, although this can be hindered in individuals with impaired consciousness. Further complicating the evaluation is the fact that acute dissection of the aorta may be painless in 5–15% of cases.

Carotid bruits were not sought in this patient. Of course, even if bruits were present, the physical examination would not have distinguished between carotid stenosis and dissection. However, this physical sign might have prompted earlier evaluation of her carotid arteries. Colour duplex ultrasound is a sensitive, non-invasive tool for this purpose, identifying signs of dissection such as intramural haematoma, intimal flap, or false lumen. It can reliably exclude cervical artery dissection.³ CT angiography, including the aorta and carotid arteries, can also be performed quickly; it is a sensitive procedure for confirming aortic and cervical artery dissection.

Surgery is generally indicated for type A aortic dissection but carries a high risk (31–46%) of morbidity or mortality in patients with cerebral infarction. Factors contributing to the poor outcome include fluctuation in blood pressure and acute reperfusion injury that may worsen ischaemia and result in haemorrhagic transformation. Fukuda reported good results in three such patients when surgery was intentionally delayed for 27–81 days.⁴

It is indeed fortunate that this patient had another contraindication to thrombolysis. The rush to initiate thrombolysis for stroke within the 3 h window should not be an excuse for ignoring subtle symptoms and signs such as atypical chest pain and carotid bruits. We should have a high index of suspicion for acute aortic dissection in such cases and a low threshold for performing carotid ultrasound.

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Figure 1 Computed tomographic angiography showing aortic dissection with true and false lumens (stars) extending into the carotid arteries bilaterally (arrows).

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Patient agrees to give her consent for this material including the image of her to be published in *Emergency Medicine Journal*. She understands that every attempt will be made to ensure her anonymity although complete anonymity cannot be guaranteed

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