Case report

Running, ischaemic stroke and carotid artery dissection

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Learning point for clinicians

Internal carotid artery dissection may occur in young healthy adults following exercise. It is important to have a low degree of suspicion for such cases, particularly in younger patients without typical cerebrovascular risk factors, as delay in diagnosis and appropriate management may result in excess morbidity and mortality.

Case

A previously healthy 60-year-old right-handed male presented to the emergency department with sudden-onset expressive dysphasia, diplopia, right-arm numbness and loss of fine motor control with involuntary movements in his right arm following the completion of his first half marathon. The race itself had been uneventful, though the patient had taken only minimal fluid intake despite warm conditions. After completing the race, he experienced mild disorientation with the presenting symptoms developing 15 min later.

His past medical and family histories were unremarkable. He was a former social smoker and had a moderate alcohol intake. On admission, he was oriented to time, place and person. The pulse rate was 76 beats/min in a regular rhythm with a blood pressure of 139/79 mmHg. Neurological examination revealed a right-sided prono tor drift, alexia and agraphia. He was noted to have impaired mental arithmetic and spelling. However, his tone, power, sensation, coordination and gait were unremarkable. His blood glucose, biochemical and haematological blood tests were within normal limits. The electrocardiogram showed sinus rhythm and the chest radiograph showed clear lung fields.

Computed tomography of his brain showed reduced attenuation in the superior left parietal lobe consistent with an acute infarct. Magnetic resonance imaging of his head, including diffusion-weighted imaging, showed extensive areas of acute infarcton in the left cerebral hemisphere involving the frontal, parietal and occipital lobes. Magnetic resonance angiography (MRA) using axial fat-suppressed T1-weighted imaging demonstrated bilateral dissection of the internal carotid arteries (Figure 1).

The patient was started on long-term aspirin (75 mg daily) and atorvastatin (80 mg daily) with advice against participating in activities associated with carotid dissection. The residual deficits 2 days post-presentation were mild loss of fine motor control in the right hand, cognitive impairment (Montreal cognitive assessment 20/30) and visuospatial impairment. He also struggled to read fluently. He was discharged home with community speech and language therapy and stroke outpatient follow-up.

Discussion

Internal carotid artery dissection (ICAD) is a rare condition. It accounts for 1–2% of all ischaemic strokes but disproportionately 10–25% of strokes in adults <50 years without typical cardiovascular risk factors.¹ Unilateral ICAD secondary to running presenting with Horner’s syndrome has been described,³ though here we present a case of acute ischaemic stroke.
secondary to bilateral ICAD caused by exercise and exacerbated by dehydration.

The aetiology of ICAD is multi-factorial; it may occur spontaneously or secondary to trivial head and neck trauma involving hyperextension or rotation of the neck, or due to a range of sporting activities. ICAD represents an important differential diagnosis in individuals presenting with acute cerebral ischaemia, either as a transient ischaemic attack or established infarct. Clinical presentation is variable, occurring immediately to days after the event. Previous reports have described presentations of unilateral neck pain and headaches, which can often be mistaken for migraines. The combination of headache and neck pain may prove a harbinger of cerebrovascular events, preceding a stroke by minutes to several days in nearly 80% of patients. It is therefore vital that such cases are assessed thoroughly with a low index of suspicion for dissection.

The gold standard imaging modality for diagnosing ICAD is axial MRA with T1-weighted fat suppression. Medical management of ICAD continues to be the subject of debate, though the recent Cervical Artery Dissection in Stroke Study (CADISS) showed antiplatelet and anticoagulation to have comparable rates of recurrent stroke and death. Management of cardiovascular risk factors is also essential. If diagnosed and managed promptly, the long-term prognosis of ICAD is good, with a rate of recurrent dissection of 2% in the first month, then 1% per year thereafter.

Conflict of interest: None declared.

References