Nontraumatic isolated acute thumb ischaemia

Dear Sir,

A 68-year-old man who was an ex-smoker presented with progressively worsening bluish discoloration of the right thumb associated with coldness, numbness and dull pain of 8 hours duration. Past medical history included ischaemic heart disease, hypercholesterolaemia and impaired glucose tolerance. On examination, his thumb was cold and cyanosed from MCP joint level distally. Capillary refill was prolonged at 3 seconds. Radial, ulnar, brachial and axillary pulses were palpable. Systemic examination was unremarkable.

Thrombophilia screen was normal. Chest radiograph did not show a cervical rib. ECG did not show atrial fibrillation. Echocardiogram showed good left ventricular function and detected a patent foramen ovale; however, there was no evidence of vegetation. Doppler study showed reduced blood flow to right thumb. Angiogram (Fig 1) showed loss of the main digital branch to the thumb from the radial artery. However, there was one small residual branch from the palmar arch supplying the thumb. The remainder of the study was normal.

The patient was commenced on IV heparin, warfarin and nifedipine but showed no improvement by 48 hours. He underwent intra-arterial thrombolysis using t-PA through an arterial line inserted in the right radial artery in the distal forearm. We chose the local route because the radial artery was easily accessible, and the thinking was that local thrombolysis might be more effective. The patient showed immediate improvement (Fig 2) following 2 mg bolus dose. Infusion rate of 1 mg/hour was continued for 3 hours. However, 2 hours post thrombolysis the thumb became blue again. Iloprost infusion was commenced. Two days later, the thumb was warm and well-perfused. The patient was sent home on warfarin and nifedipine. Two weeks later, he was seen in the clinic and his thumb appeared normal.

Fifteen percent of all cases of acute limb ischaemia affect the upper limb (Baguneid et al., 1999). The main causes of digital ischemia are vasospasm, embolism and thrombosis. Vasospastic conditions can be due to Raynaud phenomenon, hypothenar hammer syndrome, thoracic outlet syndrome and intoxication (e.g. arsenic). Raynaud phenomenon is a vascular disorder due to an exaggerated vasospasm of the digital arteries and arterioles in response to cold or emotional stress. Hypothenar hammer syndrome is caused by repetitive use of the hand as a hammer causing thrombosis of the superficial palmar arch of the ulnar artery. Thoracic outlet syndrome can be due to compression of the brachial plexus or compression of the subclavian vessels. Embolism may arise from damaged proximal intima or accidental arterial injection. Septic embolism is also a recognized cause of digital ischaemia. Thrombosis arises from damaged...
endothelium as a result of trauma or disease. Scleroderma is an example of combined spastic and occlusive disease. Vasculitis such as thromboangiitis obliterans (Buerger’s disease) frequently cause digital ischaemia (Sultan et al., 2001).

Management of acute upper limb ischaemia is dictated by the cause. The lines of treatment are surgery, infusion of thrombolytic or vasoactive drugs, or non-invasive treatment. Surgery is considered to be the mainstay of treatment. It includes embolectomy, bypass procedure, thoracic or periarterial sympathectomy, or amputation. Periarterial sympathectomy (adventitiectomy) involves stripping the adventitia from the affected vessels, which removes the sympathetic innervation and externally decompresses the vessels, allowing dilation of the vessel lumen. This technically highly demanding procedure is considered as an effective treatment option with less frequent complications than thoracic sympathectomy (El-Gammal and Blair, 1991). Successful thrombolysis was achieved in 90% of patients if started within 1 week of onset of symptoms (Baguneid et al., 1999). Thrombolysis is becoming more popular than surgery as first line treatment for selected cases. Non-invasive management includes administering heparin, iloprost, prostacyclin, prostaglandin E1 and transvenous regional guanethidine block (Stumpflen et al., 2000).

To conclude, the lower incidence of acute ischaemia of the upper limb compared to that of the lower limb may reflect their different aetiologies. Isolated acute nontraumatic thumb ischaemia can be managed by surgery, thrombolysis or non-invasively. Thrombolysis is becoming more popular as first line treatment for such cases and was successful in the reported case.

Conflict of interests
None declared.

References

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