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NEUROLOGICAL PICTURE

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Complications from cervical intra-arterial heroin injection

Complications from intravenous injections of heroin requiring neurosurgical intervention are rare, and range from the infectious (intracranial abscess, mycotic aneurysm) to the ischaemic (stroke).^{1,2} Lifetime abusers of intravenous heroin eventually develop a lack of vascular access as the superficial veins of the limbs and trunk sclerose with repeated injections. Occasionally, patients present with complications related to injections of the peripheral arteries, including distal ischaemic events and pseudoaneurysms.² Complications from injections of proximal or central arteries have not been reported.

A 54-year-old right-handed female was admitted to the neurosurgery service at our institution with diffuse subarachnoid haemorrhage (fig 1A). The patient's past medical history was significant for greater than 35 years of intravenous narcotic abuse and untreated hypertension. Of note, on her physical examination, the majority of her superficial venous systems of her four extremities demonstrated obvious signs of sclerosis ("track marks"). Conventional digital subtraction angiography revealed extensive intracranial and skull base vascular pathology (fig 1B-D). On further questioning, family members reported that the patient had resorted to injecting "into her neck" because of a lack of peripheral access.

This is the first case reported of internal carotid dissection and fusiform aneurysm with vertebral dissection and an obvious vertebral puncture injury resulting from frequent cervical intra-arterial injections of heroin. Unsterile injection sites leading to either abscess or endarteritis and local thrombosis or vasospasm and inflammation from mural injury are thought to be the underlying pathogenesis.^{3,4}

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Figure 1 (A) Axial cut of a non-contrast CT through the basal cisterns reveals diffuse subarachnoid haemorrhage. (B) AP view of the right internal carotid arteriogram demonstrates a spiral dissection involving the cervical, petrous and cavernous segments of the internal carotid artery. Note the luminal narrowing and extraluminal contrast at the level of the skull base (long arrow). Note the lobulated right middle cerebral artery aneurysm and absence of local vasospasm (short arrow). (C) AP view of the left internal carotid arteriogram demonstrates a spiral dissection involving the distal cervical, petrous and cavernous internal carotid segments, without narrowing or extraluminal contrast (long arrow). There is a fusiform dilatation of the proximal (M1) segment of the middle cerebral artery on the left beginning just distal to the carotid summit (short arrow). There is mild fusiform dilatation of the proximal (A2) segment of the anterior cerebral artery. No saccular aneurysms were demonstrated. (D) Lateral view of the cervical left vertebral arteriogram revealed a focal dissection of the cervical vertebral artery with small opposing pseudoaneurysms, consistent with a puncture injury (arrow). This focal injury is in the neck, below the angle of the mandible, at approximately C4-5.