EMERGENCY CASEBOOK

Spontaneous cervical cord haemorrhage: an unusual presentation

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Spontaneous haemorrhage within or compressing the spinal cord is a rare condition that requires emergency investigation and treatment. Such a case presenting with rapidly progressive flaccid quadriplegia, with subsequent ventilatory failure is reported. In this case the patient probably had an unfortunate complication of hypertension and over-anticoagulation.

A 65-year-old woman presented to her local district general hospital with sudden onset of neck pain of an hour's duration. Observations on admission included an irregular pulse of 90–100 bpm, blood pressure of 220/110 mm Hg and a temperature of 37.1°C. Her initial neurological examination was unremarkable; however, over the following hour she developed severe dysaesthetic pain radiating down both arms. This was immediately followed by a rapidly progressive flaccid quadriplegia developing over only 30 min. A sensory level became apparent at C4 level. Throughout these developments, the patient remained alert and oriented with a Glasgow Coma Score of 15/15. The weakness was accompanied by ventilatory failure requiring endotracheal intubation, mechanical ventilation and sedation. Of note, her medical history included poorly controlled hypertension and refractory atrial fibrillation requiring atrioventricular nodal ablation, permanent ventricular pacing and lifelong anticoagulation. Her International Normalised Ratio was found to be abnormal at 5.2, but other laboratory investigations including inflammatory markers and white cell count were within normal limits.

Her permanent pacemaker precluded MRI to investigate her myelopathy. For this reason she was taken for CT scanning of her head and the cervical spine. This showed no intracranial abnormality; however, there was a high attenuation lesion in the region of the C3/4 cord (fig 1) consistent with acute haemorrhage. Following a review of these images by the local neurosurgical service an arrangement was made for urgent transfer to the nearest neurosurgical centre.

On arrival at the regional neurosurgical centre a decision was made to proceed directly to cervical laminectomy and exploration of the cervical spinal cord, in view of an inability to proceed to definitive imaging. In this way, extra-dural or intradural extraaxial pathology could be dealt with directly. Furthermore, if the pathology was intra-axial, a generous laminectomy would adequately decompress the involved segments of the spinal cord. Indeed following laminectomy, no collection could be identified even after division of the dura. The spinal cord was found to be oedematous and suffused, so a wide laminectomy (C3–C6) was carried out.

Despite an initial complete quadriplegia and sensory level below C4, the patient made a slow but sustained neurological improvement through her stay at the critical care unit. Over a period of 3 months she was successfully weaned from mechanical ventilation, despite numerous setbacks, and regained power in both arms (MRC grade left 4/5, right 3/5) and both legs (MRC 2/5). There was also progressive improvement in all sensory

modalities in every dermatome. Tragically, on the day she was due for transfer to a rehabilitation facility she sustained a large myocardial infarction and died shortly afterwards.

DISCUSSION

A spontaneous haemorrhage in the cervical spinal cord is a rare condition.¹ The differential diagnosis for non-traumatic acute myelopathy is varied. However, this case is peculiar as it was rapidly progressive while the patient was in the emergency department. The commonest presentation of acute spinal cord haemorrhage is of neck or back pain, with a radicular component that progresses to a myelopathy over hours or days.² The sudden onset in this case is, in itself, highly suggestive of a vascular aetiology (ischaemic or haemorrhagic), although an acute disc protrusion can present similarly.

In any myelopathy, MRI is the definitive investigation to delineate the underlying pathology and guide further management. However, in this situation, where MRI was not possible acutely, a CT scan was obtained. This was able to guide management to a degree, but should always be regarded as suboptimal.³ With the CT appearances described and in the context of hypertension and over anticoagulation it is not unreasonable to assume a spontaneous spinal cord bleed. Of all spontaneous spinal cord haemorrhages, the thoracic cord is affected most commonly. In relation to the neuraxis, the most frequent haematomas are extradural, followed by subdural, followed by intraparenchymal. The patient did not have an opportunity to undergo formal angiography to exclude an underlying intraparenchymal vascular malformation or vascular tumour.

Figure 1 Sagittal CT reconstruction of the cervical spine showing high attenuation lesion indicative of acute haemorrhage.

There is no level 1 evidence relating to the treatment of this condition, although most would agree that emergent spinal decompression is of benefit based on what evidence is available.⁴ This prevents any secondary damage that occurs with cord swelling, further vascular compromise and ischaemic/reperfusion injury. Adequate oxygenation and perfusion is, as always, the top priority in the emergency department.

In summary, this case illustrates a problem that, although rarely seen in the emergency department, requires rapid recognition and prompt neurosurgical referral in order to maximise potential recovery. It also illustrates a rare complication of long-term anti-coagulation and poorly controlled hypertension that should be kept in mind in an emergency setting.

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