

Ipsilateral hemispheric ischaemic hypoxic changes during central line placement: a video-electroencephalogram correlate

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► Figures 1–4 and a video are published online only at <http://emj.bmj.com/content/vol25/issue12>

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Accepted 8 April 2008

ABSTRACT

When venous access is needed for intravenous fluids or antibiotics and a peripheral site is unavailable or not suitable, a central line is placed either in the neck or the groin. Complications have been reported during central line placement including (but not limited to) pneumothorax, haemothorax, arrhythmias, air embolism and introduction of infection. The case history is reported of a patient who developed ipsilateral hemispheric ischaemic hypoxic changes during central line placement. This was represented on the surface electroencephalogram by ipsilateral hemispheric voltage attenuation.

Video-electroencephalogram (EEG) recording was requested on a 65-year-old man with septicaemia and renal failure for evaluation of episodes of altered awareness. During review of the overnight record, note was made of a sudden change in the EEG background with abrupt appearance of left hemispheric voltage attenuation (figs 1–3 in online supplement). This lasted for about 30 s before a return to baseline (fig 4 in online supplement). Upon review of the video record it was noted that a central line had been inserted in the left neck with pressure being applied at the base of the neck. Abrupt onset of left hemispheric voltage attenuation occurred and the patient was noted to have violent jerks of his arms and legs (see online video). With removal of the pressure at the base of neck, the EEG returned to baseline.

DISCUSSION

A central line allows rapid access to the central circulation. Central line placement is indicated when peripheral venous access is not possible or when the anticipated delay in establishing such an access may result in increased mortality or morbidity. A central line accomplishes rapid fluid replacement even in the setting of circulatory collapse and symptomatic hypotension. The most commonly used veins are the femoral, subclavian and internal jugular veins. Complications have

been reported during central line placement. These are more frequent when central line placement is attempted by an inexperienced operator and include haematoma with resultant compromise of the upper airway, inadvertent extravascular placement causing haemothorax, pneumothorax, hydrothorax and hydromediastinum, laceration of femoral, subclavian or carotid artery, air embolism and introduction of infection. The risk of pneumothorax can be minimised by ultrasound guidance and, in the hands of experienced physicians, the incidence of pneumothorax is about 1%. Arrhythmias have been reported during the insertion process when the wire comes in contact with the endocardium. These usually resolve when the wire is pulled back. Acute ischaemic strokes after central line placement have been reported. Riebau *et al*¹ reported a 53-year-old woman with acute cerebral infarcts in the anterior and posterior cerebral circulations after inadvertent central line placement into the right vertebral artery with the length of the catheter in the aortic arch.

Our patient had ipsilateral cerebral ischaemia and hypoxia due to pressure being applied at the base of neck during central line placement. This was probably the result of ipsilateral carotid artery compression. Electrographically, this presented with ipsilateral hemispheric voltage attenuation. He had violent jerks of the arms and legs that probably represented hypoxic myoclonic jerks. Fortunately the cerebral activity returned to baseline once the pressure on the carotid artery was relieved, otherwise he could have suffered a potentially devastating internal carotid artery stroke. Physicians should be aware of this potential complication while inserting a central line in the neck.

Competing interests: None.

Patient consent: Obtained from the patient's relative.

REFERENCES

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Emerg Med J 2008 25: 831
doi: 10.1136/emj.2008.060632

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