What’s in your head?
The diagnosis and management of acute basilar artery thrombosis

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Introduction

• Acute basilar artery thrombosis presents with features of a posterior circulation stroke. Dysarthria, vertigo, nausea and headache are common symptoms
• Physical examination may reveal decreased level of consciousness, facial weakness, ataxia and oculomotor signs
• Risk factors are the same as for ischaemic stroke: Hypertension, smoking, diabetes, hyperlipidaemia and coronary disease
• Despite advancements in neuroimaging and intervention, prognosis remains poor with mortality approaching 85% in patients with acute basilar artery thrombosis.

Case vignette

Patient 1:
75 year old man presented with sudden onset ataxia. GCS fluctuated between 8 to 15 with apnoeic episodes. Initial CT brain was unremarkable. Symptoms were consistent with intermittent brainstem stroke. He was transferred to a tertiary centre for CT angiography which demonstrated an unstable subtotal basilar artery occlusion. This was managed with intra-arterial clot retrieval.

Patient 2:
83 year old man presented with vomiting, left hemiparesis and low GCS. He proceeded to CT angiography which demonstrated complete basilar artery occlusion with no distal blood flow. Intra-arterial clot retrieval and thrombolysis resulted in restoration of distal blood flow and remarkably, a complete neurological recovery.

Brainstem physiology

• V, VI and VIIth cranial nerve nuclei lie in the pons
• Respiratory centre is located in the medulla oblongata
• The midbrain is concerned with arousal, attention and muscle tone.

Brainstem arterial supply

• Basilar artery supplies the brainstem
• Posterior inferior cerebellar artery supplies the upper medulla
• Anterior inferior cerebellar artery supplies the pons
• Posterior cerebral artery supplies the midbrain.

CT angiogram

A

Image A: Total basilar artery occlusion with no distal blood flow

B

Image B: Restoration of blood flow to posterior circulation following intra-arterial clot retrieval

Learning points

• High index of suspicion is required to investigate and diagnose basilar artery thrombosis
• Knowledge of brainstem physiology and varying clinical presentation is vital
• These patients should have urgent vascular imaging and reperfusion therapy as appropriate (IV thrombolysis or neurointervention)
• CTA is not routinely performed in acute stroke but should be considered in clinically suspicious cases
• Outcome is improved by early diagnosis and intervention.

References