

Hypoglossal nerve palsy due to extracranial internal carotid artery dissection

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History

- 39-year-old male with no significant medical or surgical history.
- Gradual-onset generalised occipital headache during bodyweight exercise.
- Day 2: localisation of pain to right side with radiation into neck.
- Days 3-4: new right-sided ptosis, miosis, mild dysphagia and dysarthria.
- Day 5: presented to ED with persisting pain.

Examination

- Right-sided tongue deviation on protrusion.
- Consistent with **right hypoglossal nerve (CN XII) palsy**.
- No other abnormalities on neurological and routine systemic examinations.

Imaging

- **Contrast-enhanced CT angiogram** findings typical for **right ICA dissection**:
- 1. Dissection flap commencing at C1 segment and extending into C2 segment.
- 2. False lumen containing intramural haematoma and lacking contrast opacification.
- 3. True lumen exhibiting tapering stenosis to become slit-like superiorly.
- No evidence of cerebral ischaemia on non-contrast MRI.

Management and outcome

- Dual antiplatelet therapy for 3 months followed by antiplatelet monotherapy.
- Complete resolution of symptoms at 2 months and no new symptoms reported.

ICA dissection^{1,2}

Significance

- Arterial dissection is responsible for 10-25 % of strokes in patients <45 years.

Aetiology

- Dissection is defined as **separation of vessel wall layers**.
- Usually occurs in the **extracranial** portion of the artery.
- Mechanisms include tears in the tunica intima and rupture of vasa vasorum.
- Commonly classified as **spontaneous** or secondary to major **trauma**.
- Minor trauma (e.g. exercise) may trigger dissection in patients with risk factors.
- Risk factors include hypertension, connective tissue disorders, gross vessel abnormalities, recent infection, migraine with aura and hyperhomocysteinaemia.

Clinical presentation

1. Non-specific **headache** or **neck pain**.
2. Ipsilateral **Horner's syndrome**.
3. Ischaemia (**stroke**, TIA).
4. Lower **cranial nerve palsies** (IX, X, XI, XII).
 - Due to close anatomical relationship with ICA.
 - Unilateral hypoglossal nerve palsy can cause dysphagia, dysarthria, ipsilateral tongue deviation on protrusion, flaccid tongue weakness and tongue atrophy.

Diagnosis

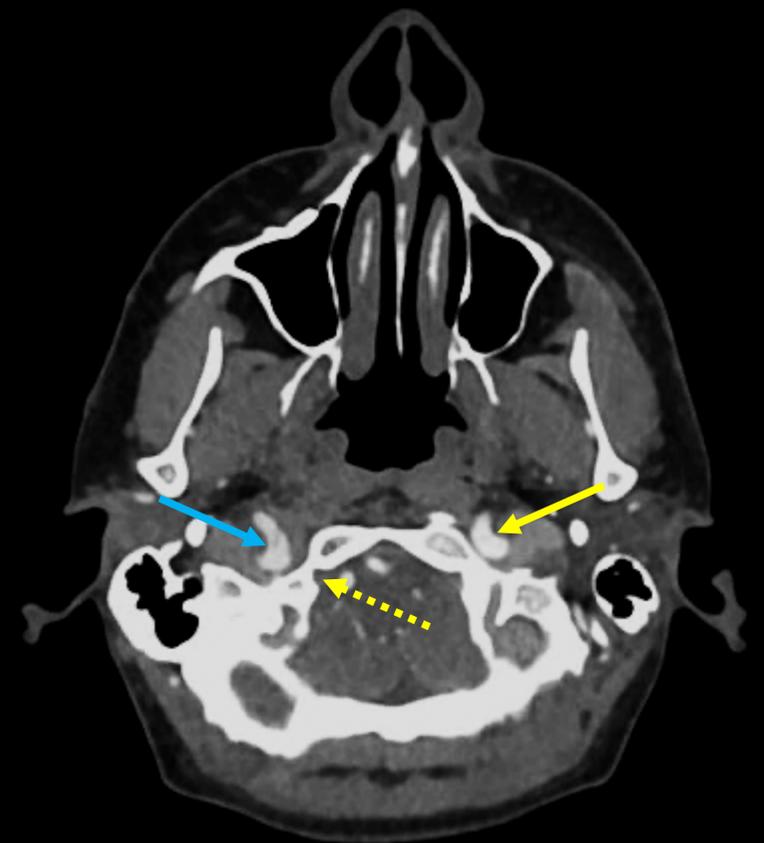
- Urgent **CT angiography** or **MR angiography** is indicated if suspected clinically.
- Imaging findings include thickened vessel wall, dissection flap, tapering stenosis, contrast filling defect and false lumen containing intramural haematoma.
- Stroke-protocol MRI should also be performed to assess for cerebral ischaemia.

Management

- Aimed at minimising the risk of new or recurrent ischaemic events.
- First-line comprises **antiplatelet therapy or anticoagulation**.
- Endovascular intervention (stenting ± angioplasty) if recurrent ischaemic events.

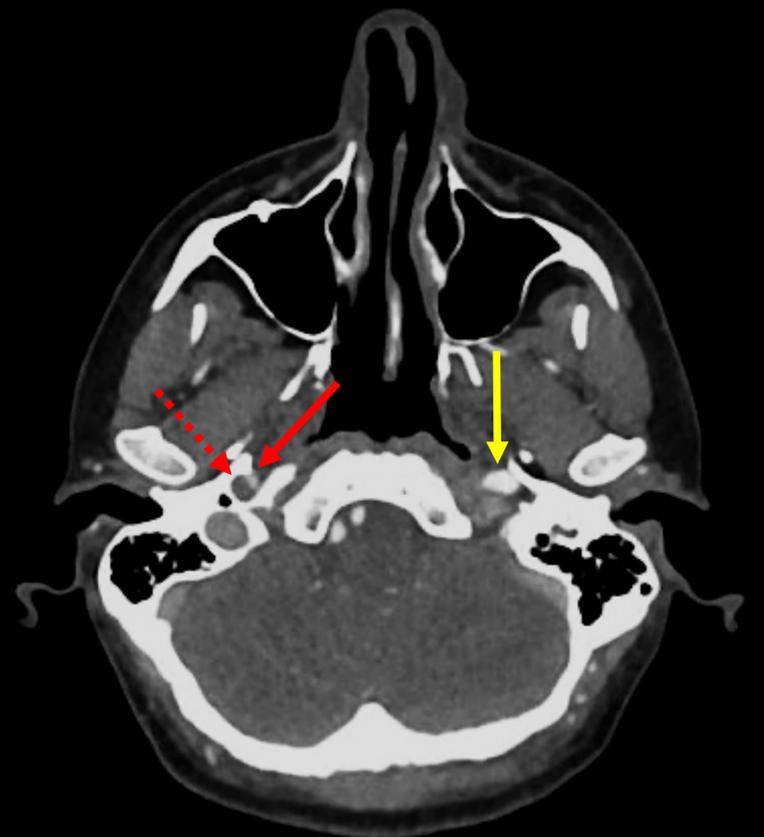
Key learning points

- ICA dissection is an **important cause of stroke in young adults**.
- Clinical **presentation is variable** and **deficits may be subtle or transient**.
- **Thorough history-taking and examination** are essential in achieving diagnosis.
- Urgent **CT angiography or MR angiography** is indicated if suspected clinically.
- **Prompt management** is needed to minimise the risk of new or recurrent stroke.



Contrast-enhanced CT angiogram: **dissection flap**

- Dissection flap in distal C1 segment of right ICA
- Right hypoglossal canal containing the hypoglossal nerve (note close proximity to the dissection flap)
- Normal left ICA



Contrast-enhanced CT angiogram: **double lumen sign**

- False lumen at proximal C2 segment of right ICA containing intramural haematoma and lacking contrast opacification
- True ICA lumen shows contrast enhancement, lies medially and appears narrowed
- Normal left ICA

¹Marciniec et al. Non-traumatic cervical artery dissection and ischemic stroke: A narrative review of recent research. Clin Neurol Neurosurg. 2019.

²Mehdi et al. Craniocervical Dissections: Radiologic Findings, Pitfalls, Mimicking Diseases: A Pictorial Review. Curr Med Imaging Rev. 2018 Apr