CASE REPORT

Hypoglossal nerve palsy caused by an aneurysm of the external carotid artery

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Abstract

We report a rare case of hypoglossal nerve palsy in a 74-year-old woman, which was caused by an aneurysm of the external carotid artery. Fluoroscopic-guided embolisation with micro-coils was performed with complete resolution of symptoms.

Key words:
embolisation, external carotid artery aneurysm, hypoglossal nerve palsy

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Clinical relevance

This article reports an unusual cause of hypoglossal nerve palsy (HNP) and discusses the possible differential diagnosis and treatment. External carotid artery (ECA) aneurysms are rare and described is an unusual clinical manifestation.

Case

A 74-year-old woman was referred by her general medical practitioner with a 5-week history of submandibular swelling and a 2-week history of left tongue swelling with dysarthria. Her medical history included Gorlin Goltz Syndrome, for which she had multiple surgical procedures; bilateral hip replacements; and left duplex kidney. Approximately 40 years prior to presentation, the patient sustained a fracture of cervical spines four and five, which was treated non-surgically. There was no history of neck surgery. She was a non-smoker and did not consume alcohol.

On examination, the left submandibular gland was mildly enlarged and soft. The left tongue was diffusely enlarged and also soft. On protrusion, the tongue deviated to the left (Fig. 1). No fasciculations were seen. No other abnormalities were found on neurological examination. Nasoendoscopy revealed no abnormalities of the tongue base, pharynx, larynx or hypopharynx. Haematological investigations were all within normal range including the erythrocyte sedimentation rate and C-reactive protein.

A magnetic resonance imaging (MRI) scan of the head and neck demonstrated no focal lesion within the tongue or submandibular gland. An 18 mm mass lying anterior to the left carotid artery was identified. Digital subtraction angiography further defined the mass as an aneurysm arising from the ECA, between the origins of the superior thyroid artery and, in this case, the lingual–facial trunk (Fig. 2). A comparison with an MRI scan performed 3 months earlier, requested for a different clinical purpose, showed no evidence of the aneurysm. The aneurysm was thought to be of the
saccular variety of the ECA, or a proximal aneurysm of a side branch.

After counselling the patient of the risks of open surgery versus radiological intervention, fluoroscopic catheter-guided embolisation was performed across the neck of the aneurysm with micro-coils. The procedure and patient’s recovery passed uneventfully.

Twenty-four hours after embolisation, the tongue oedema started to resolve as well as the deviation on protrusion. This confirmed the diagnosis of HNP due to pressure from the ECA aneurysm. At 1 month, there was complete resolution of all initial clinical findings.

Discussion

Isolated HNP are uncommon, as are aneurysms of the ECA or its branches\(^1,2\). The clinical manifestations can result in weakness, atrophy and fasciculation. Dysarthria and dysphagia may occur; however, this is usually mild as there is compensation from the contralateral muscles\(^1\).

HNP can occur due to numerous pathologies at any point along its course from the motor cortex to its termination in the tongue. The commonest causes are usually neurological such as infarctions and demyelination but rarely cause HNP in isolation\(^1\). Investigation of isolated HNP is summarised by Freedman et al.\(^4\).

Isolated HNP has been reported as idiopathic\(^4\) but more likely to be iatrogenic. This may be anticipated in ablative surgery or a complication of procedures such as, neck dissection, submandibular gland removal or carotid surgery\(^5\)–\(^7\).

Extracranial carotid artery aneurysms are primarily associated with the common and internal carotid, with the predominant aetiology being atherosclerosis. Other causes include infection, trauma, previous carotid or neck surgery\(^8\).

Aneurysms of the ECA are the rarest of the extracranial carotid system\(^1\)–\(^2\). Infection, trauma (penetrating or blunt) and iatrogenic causes have been associated with aneurysms of the ECA and its branches, with the majority being of the pseudoaneurysm variety rather than true aneurysms\(^5\)–\(^8\)–\(^9\).

The aetiology of this aneurysm and its type were not ascertained. Atherosclerosis and trauma may have been a cause with a significant neck injury being sustained 40 years prior to presentation. However, this does not account for the possible time lag and duration of development.

Numerous techniques are available for common carotid and internal carotid aneurysm repair including resection and grafting, endo-luminal stent grafting and embolisation\(^8\). Options for treatment of ECA aneurysms are resection or embolisation with little consequence due to blood supply from the contralateral side. In this case, catheter-directed endo-luminal embolisation proved successful with no morbidity. Isolated HNP must be diagnosed by exclusion; in this case, the aetiology was found on radiological imaging.

Conflict of interest statement

There is no conflict of interest between the authors and the production of this article. No sponsorhip or financial gain was obtained in the production of this article.
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