CASE REPORT

Acute cervical artery dissection after a dental procedure due to a second inferior molar infection

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SUMMARY

Periodontal infections might represent one of the causative factors for cervical artery dissection. We present a case of a 49-year-old woman admitted due to headache. The patient had been suffering from a right second inferior molar infection with a cervical phlegmon for 1 week prior to admission. On 2 October 2014, the patient went to the dentist and a molar extraction was performed in the morning. In the afternoon, the patient began to experience right hemifacial pain that progressed towards an intense and bilateral headache. Neurological status at the time of admission revealed right miosis, ptosis and conjunctival hyperaemia. A CT angiography showed a right internal carotid artery dissection provoking a high-degree stenosis. The relationship between periodontal infection and vascular disease has been previously presented. Microbial agents may directly, and inflammatory and immunological host response indirectly, influence inflammatory changes in cervical arteries favouring dissections with minor traumas.

BACKGROUND

Periodontal infections might represent one of the causative factors for cervical artery dissection (CAD).

CASE PRESENTATION

A 49-year-old Caucasian woman, a former smoker, was admitted on 3 October 2014, due to headache. The patient had been suffering from a right second inferior molar infection with a cervical phlegmon

for 1 week prior to admission. On 2 October 2014, the patient went to the dentist and a molar extraction was performed in the morning. The procedure was performed under local anaesthesia and required a cervical hyperextension for only a few minutes. No direct trauma related to the dentist's instruments was reported. In the afternoon, the patient began to experience right hemifacial pain that progressed towards an intense and bilateral headache. Analgesic treatment was not effective and the headache prevented sleep. The patient reported nausea and vomiting, photophobia and decreased right eye vision. Neurological status at the time of admission revealed right miosis, ptosis and conjunctival hyperaemia. The rest of her neurological status was normal.

INVESTIGATIONS

Cranial CT scan was normal. A lumbar puncture excluded central nervous system infection, and an urgent intracranial venous CT excluded central venous thrombosis associated with dental infection. The day after, carotid echography showed a probable right internal carotid artery (ICA) occlusion. Later CT angiography showed a right ICA dissection provoking a high-degree stenosis ([figure 1A](#)) and left vertebral artery dissection ([figure 1B](#)). Cranial CT scan was normal.

TREATMENT

Anticoagulation with low-molecular-weight heparin (enoxaparin 60 mg/12 h) was initiated.

Figure 1 CT angiography showing (A) a right internal carotid artery dissection (white arrow) and (B) left vertebral artery dissection (white arrow).

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OUTCOME AND FOLLOW-UP

The patient was discharged home on 9 October. Control MRI at 3 months showed no cerebral ischaemic lesions and resolution of the right ICA dissection. At 6 months' follow-up, the patient presented slight right ptosis and miosis.

DISCUSSION

The relationship between periodontal infection and vascular disease has been previously presented.¹ However, CAD after periodontitis has rarely been reported in the literature.^{2–4} Siwiec and Solomon² described a patient with a bilateral ICA dissection after removal of a right tooth abscess. Cerrato *et al*³ and De Santis *et al*⁴ described a woman with a severe left periodontal infection, suffering from a left ICA dissection after mandibular third molar extraction. The authors hypothesised that mechanical injury of the dental extraction and the periodontal infection might represent the causative factors.^{3–4} Microbial agents and an indirect inflammatory and immunological host response, with activation of cytokines and proteases, could induce excessive extracellular matrix degradation and thus weaken the vessel wall.⁵

Related with the previous hypotheses, and maybe as an extreme expression of them, Shipley *et al*⁶ described aneurysms and pseudoaneurysms caused by erosion of ICA by cervical infections (cervical phlegmon or peri/tonsillar abscess). Anatomopathological description in one case with a perforation of ICA is outlined as follows: "Sections of carotid at level of carotid foramen showed normal walls, but in neighborhood of rupture, adventitia and tunica media thickened by inflammatory products. Sac composed of connective tissue with areas of cellular infiltration, chiefly polymorphonuclear leucocytes. No part of arterial wall was seen in capsule."⁶ Grau *et al*⁵ suggested that this theory could be applied to some of their patients with infection-associated carotid artery dissection (in 2 patients with pharyngitis). Periodontal infection has also been related with aneurysms in other arteries, such as the aortic artery.⁷

Learning points

- In conclusion, periodontal infections may influence direct and indirect inflammatory changes in cervical arteries. These may favour dissections with minor traumas. Any procedure implicating cervical hyperextension or rotation should be carefully performed in these patients in order to avoid unusual but potentially fatal complications, such as cervical artery dissection.

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Competing interests None declared.

Patient consent Obtained.

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