Sir,

Dural arteriovenous malformation in the petrosal sinus presenting as acute visual loss and total ophthalmoplegia

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The common clinical features of arteriovenous malformations (AVMs) are intracranial haemorrhage, seizure, headache, or other signs of an intracranial mass.[1] Dural AVMs (DAVMs) have been estimated to represent 10–15% of cranial AVMs.[2] The clinical features depend on the location of the DAVM and the abnormalities of venous drainage. Ocular manifestations include pulsating exophthalmos, orbital congestion, and oculomotor disorders. DAVMS situated primarily in the inferior petrosal sinus is unusual. We report a rare case of DAVM involving the ascending pharyngeal artery and the inferior petrosal sinus manifesting as acute visual loss and total ophthalmoplegia. Superselective digital subtraction angiography (DSA) is used to explore this rare cranio-orbital venous pathway.

Case report

A 74-year-old man was referred with painful loss of vision in the left eye. The patient had experienced a red eye 2 weeks prior to admission, and a diagnosis of episcleritis had been made and treatment initiated with flumethalone eyedrops. Visual acuity at presentation was 6/8.6 in the right eye and no light perception in the left eye. No other medical problem or history was elicited at presentation except hypertension. The general physical examination was unremarkable. Careful inspection showed severe proptosis, ptosis, total ophthalmoplegia, and conjunctival chemosis with dilated vessels over the left eye (Figure 1). The left pupil was fully dilated. Fundoscopy revealed venous stasis retinopathy in the left eye. The intraocular pressure was 48 mmHg in the left eye and 19 mmHg in the right eye.

Computed tomography (CT) demonstrated an enlarged left superior ophthalmic vein (SOV) and a relatively dilated left cavernous sinus. Cerebral DSA showed a DAVM supplied by the left ascending pharyngeal artery and draining into the inferior petrosal sinus (Figure 2). Venous drainage followed an unusual retrograde pattern from the inferior petrosal sinus to the cavernous sinuses and left SOV. Following transarterial selective embolization with *N*-butyl cyanoacrylate mixture (NBCA), the patient's signs/symptoms subsided except for the visual loss and ophthalmoplegia. The follow-up angiogram showed complete obliteration of the DAVM. No evidence of recurrence was found 4 years after the procedure.

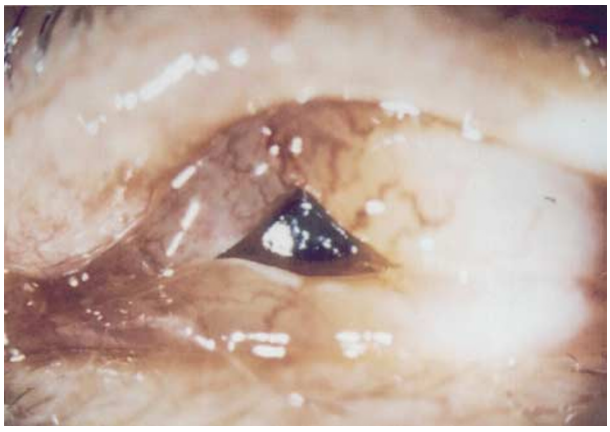

Figure 1 Clinical photograph, showing severe chemosis and dilated conjunctival vessels in the left eye.

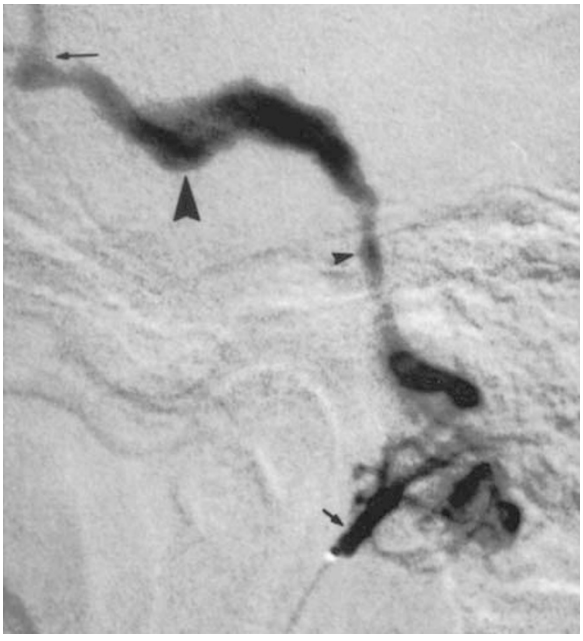

Figure 2 Lateral superselective neuromeningeal track of ascending pharyngeal artery injection demonstrates the AVM filled by the neuromeningeal trunk (short arrow) and draining to the inferior petrosal sinus (small arrowhead). Note that the shunt venous drainage curves frontally to the cavernous sinus (large arrowhead) and causes a prominent enlarged superior ophthalmic vein (long arrow).

Comment

DAVMs represent arteriovenous shunts from a dural artery to either one of the major sinuses or into variceal cortical veins. Patients usually present between the ages of 20 and 79 years. A etiologic factors include trauma, surgery, infection, and sinus thrombosis.[3–5]

The clinical presentations of DAVMs depend on the location of the DAVM and include tinnitus, cranial nerve

palsies, and/or signs related to venous congestion in the orbit. CT scanning alone is usually not useful in demonstrating the DAVM. Superselective angiography can help to determine the exact location and haemodynamic features of DAVM. Venous drainage into the pial venous system via the deep middle cerebral vein can give rise to cerebral pail venous hypertension, which may cause papilloedema, headache, hydrocephalus, and increase the risk of cerebral haemorrhage.[5] Occipital DAVMs may develop carotid-carvenous fistula and cause anterior intracranial venous drainage.[6] The unusual feature of the present case was a DAVM located between the ascending pharyngeal artery and the inferior petrosal sinus, giving rise to severe ocular complications. The development of visual loss and the total ophthalmoplegia may have been because of persistent severe venous hypertension of the ophthalmic veins and cavernous sinus. Visual dysfunction in DAVMs is usually the result of venous hypertension, venous infarct, haemorrhage,[7] or rarely a result of sinus thrombosis.[8] Cerebral angiography can aid prompt diagnosis and treatment.

We would like to point out this rare original location and retrograde pattern of petrosal sinus DAVM. It can mimic the clinical presentations of a cavernous sinus DAVM, and requires cerebral angiography for prompt diagnosis and management. It is also emphasized that although DAVM is not a common cause of visual dysfunction, early diagnosis can avoid serious ocular complications.

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Massive subretinal bleed in a patient with background diabetic retinopathy and on treatment with warfarin

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Massive intraocular haemorrhage is a devastating and well-known complication of anticoagulation treatment in eyes with exudative age-related macular degeneration.[1] Thromboembolism, prosthetic heart valves, previous myocardial infarction, and strokes are some of the most common conditions where anticoagulation treatment is indicated.[2] However, intraocular bleed is not common in normal nonpredisposed eyes (without any neovascularization) even with anticoagulation treatment. Background diabetic retionopathy alone is not known to be related to massive retinal bleed. Here we report a case of massive subretinal bleed in a patient with