CASE REPORT

Orbital varix thrombosis: a rare cause of unilateral proptosis

Ryckie George Wade,¹ Thomas B Maddock,² Srinivasan Ananth²¹Norfolk and Norwich University Hospital NHS Foundation Trust, Norwich, Norfolk, UK²Department of Medicine for the Elderly, Norfolk and Norwich University Hospital NHS Foundation Trust, Norwich, Norfolk, UK**Correspondence to**
Dr Ryckie George Wade,
ryckiewade@gmail.com**SUMMARY**

Orbital varices are thin walled, low flow, distensible veins which may rarely present with periorbital pain, proptosis or visual loss. Most orbital varices may be managed conservatively and only warrant surgery in the presence of recurrent thrombosis, disfiguring proptosis or acute visual loss. This report concerns an 84-year-old Caucasian woman who was admitted following a fall and noted to have isolated proptosis of the right eye, with vertical diplopia. All biochemical and haematological investigations were normal. A CT scan of the orbits demonstrated a serpiginous soft tissue mass within the superior portion of the right orbit, consistent with a thrombosed orbital varix. Conservative management was agreed with prism glasses and ophthalmological follow-up.

BACKGROUND

Varices are rare, abnormally thin walled and distensible veins with low flow velocities. The aetiology of orbital varicosities is unknown and the literature is sparse. Varicosities within the orbit are most commonly asymptomatic, but may present with intermittent periorbital pain, unilateral proptosis or acute visual loss. This report describes the typical presentation of a thrombosed orbital varix and reviews the literature to date.

CASE PRESENTATION

An 84-year-old woman was admitted following a remembered fall at home, which occurred while getting out of bed. Her medical history included hypothyroidism, depression and presbyopia. On admission she was asymptomatic, but physical examination revealed an axial proptosis of the right eye (figure 1); her visual acuity was stable (actual: right 6/36⁺¹ and left 6/36; corrected 6/12 and left 6/18), visual fields were intact, pupillary responses were equal and indirect fundoscopy was unremarkable. A right-sided vertical diplopia due to weakness of the right superior rectus was noted, while all other eye movements were normal. Intraocular pressures were normal according to Goldmann tonometry. No formal perimetry testing was undertaken. Her physical examination otherwise was unremarkable and lying/standing blood pressures were within acceptable limits.

INVESTIGATIONS

All biochemical and haematological indices were normal. Her resting ECG did not reveal any significant conduction abnormalities. Therefore, a contrast enhanced CT of the head and orbits was

undertaken, considering the mechanism of injury. This demonstrated a non-enhancing heterogeneous, serpiginous soft tissue mass within the superior portion of the right orbit, extending from the superior orbital fissure to the anteromedial wall of the orbit (figure 2). It was clearly separated from the optic nerve and extraocular muscles. No contrast within the neighbouring arteries was evident. The flow within the carotid and cavernous sinus was appreciable. No other abnormalities were noted elsewhere. These findings were consistent with an isolated thrombosed superior orbital varix (thrombosed varicose superior orbital vein). We did not undertake a duplex scan of the orbit because a fistula was not suspected and moreover, it would not have altered the management plan.

DIFFERENTIAL DIAGNOSIS

In the absence of systemic symptoms and biochemical abnormalities, there are few causes of a serpiginous soft tissue mass within the orbit which is distinctly separated from the neighbouring structures. Given the absence of appreciable arteries adjacent to the mass and the lack of contrast within the varix, a fistula was considered unlikely and the features were most consistent with a thrombosed varix. An ultrasound of the orbit was concluded to be unnecessary by the ophthalmologists as it would not alter the treatment.

TREATMENT

A shared decision was reached for conservative management with prism glasses (to correct vertical diplopia). She was treated with prophylactic low-molecular-weight heparin during her admission and given the absence of intra-cranial thrombus

Figure 1 A photograph showing subtle proptosis of the right eye, characterised by loss of the levator recession in the upper eyelid and the visible rim of conjunctiva superior to the limbus of the iris.

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Figure 2 Axial and coronal CT slices with intravenous contrast showing a serpiginous soft tissue mass within the superior portions of the right orbit, consistent with a thrombosed right superior orbital varix. The cavernous sinus remains intact.

extension and her risk of falls and head injury, no additional antiplatelet or anticoagulant therapies were initiated.

OUTCOME AND FOLLOW-UP

The patient was discharged after a 5-day admission, back to her residential home, with ophthalmological follow-up 3 monthly. To date she remains well.

DISCUSSION

Orbital varices are thin walled, low flow, distensible veins which may be singular or plexiform. Affecting the young and elders equally,¹ the aetiology of orbital varices remains a topic of debate and the literature is sparse.²

When varices communicate with the extraorbital circulation, engorgement may occur through a Valsalva manoeuvre or similar action (eg, bending, coughing and straining)^{3–4} resulting in intermittent periorbital pain, varying degrees of proptosis, thrombosis and haemorrhage.⁵ Vascular complications such as variceal thrombosis or haemorrhage usually result in acute unilateral anopia due to optic nerve compression.

The differential diagnosis of orbital varicosities is limited, but includes carotid-cavernous or local arteriovenous fistulae and soft tissue neoplasms. Orbital varices are easily identifiable on either CT or duplex ultrasound imaging. CT is preferred when there may be a value in imaging the entire head (as with our elderly patient, the possibility of extraorbital pathology existed), but being a static modality, it is less reliable in demonstrating flow across fistulae. Fine cut (3 mm) contrast-enhanced-CT scans usually show ill-defined, heterogeneous multiloculated enhancing soft tissue mass(es) with or without connections to the orbital and extraorbital circulation. When thrombosed, orbital varices may or may not show patchy enhancement and clinicians should be vigilant for evidence of thrombus extending to the cavernous sinus. Furthermore, such varices may contain phleboliths when closely associated with the orbital wall, resulting in local bony erosions and orbital expansion.⁶ Alternatively, duplex ultrasound is a repeatable primary imaging modality for the orbit and reliably demonstrates flow across arteriovenous fistulae of varying velocities.^{7–8} Orbital ultrasound may be performed using a high frequency (5–7.5 MHz) probe on B-mode with

colour Doppler confirming flow: to better identify varices, the patient should be examined lying down while performing a Valsalva manoeuvre in order to demonstrate flow variations within such vessels. However, ultrasound is operator dependent and cannot adequately image beyond the orbit.

Most orbital varicosities are amenable to conservative management with prism-based orthoptics to correct diplopia. Furthermore, there is no published evidence for antiplatelets or anticoagulants in treatment of thrombosed orbital varicosities. Given the complexity of surgical excision and the associated risk of visual loss, surgery should only be considered in the presence of recurrent painful thrombosis, disfiguring proptosis or optic nerve compression. For distensible varices, curative surgical methods include percutaneous variceal embolisation, alcohol injection sclerotherapy, direct surgical excision or endovascular CO₂ laser ablation. Symptomatic thrombosed orbital varices are only amenable to surgical excision under direct vision.¹

Learning points

- Unilateral proptosis due to orbital varix thrombosis is a rare clinical presentation and accurate identification is important in guiding management.
- Most patients with thrombosed orbital varices may be managed conservatively with orthoptic devices.
- Recurrent painful thrombosis, significant disfigurement or optic nerve compression are indications for surgical excision of thrombosed orbital varices.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Arat YO, Mawad ME, Boniuk M. Orbital venous malformations: current multidisciplinary treatment approach. *Arch Ophthalmol* 2004;122:1151–8.
- 2 Carrim ZI, Ahmed TY, Wykes WN. Isolated superior ophthalmic vein thrombosis with orbital congestion: a variant of idiopathic orbital inflammatory disease? *Eye* 2007;21:665–6.
- 3 Shields JA, Dolinskas C, Augsburger JJ, et al. Demonstration of orbital varix with computed tomography and Valsalva manoeuvre. *Am J Ophthalmol* 1984;97:108–10.
- 4 Cohen JA, Char DH, Norman D. Bilateral orbital varices associated with habitual bending. *Arch Ophthalmol* 1995;113:1360–2.
- 5 Bullock JD, Goldberg SH, Connelly PJ. Orbital varix thrombosis. *Ophthalmology* 1990;97:251–6.
- 6 Islam N, Mireskandari K, Rose GE. Orbital varices and orbital wall defects. *Br J Ophthalmol* 2004;88:1092–3.
- 7 Ko F, DiBernardo CW, Oak J, et al. Confirmation of and differentiation among primary vascular lesions using ultrasonography. *Ophthal Plast Reconstr Surg* 2011;27:431–5.
- 8 Duan Y, Liu X, Zhou X, et al. Diagnosis and follow-up study of carotid cavernous fistulas with color Doppler ultrasonography: analysis of 33 cases. *J Ultrasound Med* 2005;24:739–45.

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