Case Reports

An unusual case: Bilateral orbital varices

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ABSTRACT.
Purpose: **To present a rare case of bilateral orbital varices.**
Methods: **An 18-year-old man showing bilateral orbital masses on magnetic resonance (MR) imaging was examined with color Doppler ultrasonography (US), computed tomography (CT) and digital subtraction venography.**
Results: **The presenting symptoms of the patient were pain and fullness in both orbits induced by bending forward. Ocular examination was normal with the exception of a two milimeter proptosis of both eyes during Valsalva maneuver. MR imaging demonstrated bilateral retrobulbar masses, but was not diagnostic. The comparison of CT images obtained before and after Valsalva maneuver revealed the diagnosis of orbital varices. Color Doppler US and orbital venography demonstrated a large venous connection between the lesions and systemic circulation.**
Conclusion: **Clinical presentation of orbital varices is unusual. Different radiological methods may be necessary for the confirmation of the diagnosis and demonstration of the anatomic and the dynamic features of the lesions.**

Key words: orbital varices – proptosis – magnetic resonance imaging – computed tomography – color Doppler ultrasonography.

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Primary orbital varix is a congenital venous malformation which usually manifests as intermittent proptosis (Jacobiec & Jones 1979). Lowering of the head position or Valsalva maneuver, inducing an increase in venous pressure, causes temporary enlargement of the varix and the proptosis. Orbital varix is usually unilateral (Weiss & Hurwitz 1990). We report a case with bilateral orbital varices in the light of different radiological methods.

Case Report

An 18-year-old man was referred to the Department of Ophthalmology with MR images displaying bilateral orbital masses (Fig. 1). He complained of periocular dull pain and fullness in both orbits appearing while bending forward, over a period of about ten years. Eye motility, pupils, biomicroscopic examination, and ocular tensions were found to be normal. Visual acuity was 20/20 in both eyes. Visual field examination with 76 point screening test was normal. Hertel exophthalmometer gave a reading of 11 mm at rest and showed 2 mm increase in both eyes during Valsalva maneuver.

Magnetic resonance (MR) imaging demonstrated bilateral retrobulbar masses showing intermediate signal intensity on T1-weighted spin-echo images and marked hyperintensity on T2-weighted spin-echo images with 1 Tesla unit (Fig 1). After intravenous contrast medium (gadolinium-DTPA), there was inhomogeneous contrast enhancement of the lesions.

B-mode ultrasonography (US) showed both masses enlarging with Valsalva maneuver. Color Doppler US demonstrated antegrade venous flow within the lesions and retrograde venous flow during the Valsalva maneuver (Fig. 2).

On axial computed tomography (CT) images, well-circumscribed homogeneous masses extending to the orbital apex were noted, enlarging markedly with Valsalva maneuver with forward displacement of the eyes (Fig. 3). Proptosis on CT images was approximately 5 mm in both eyes. Postcontrast CT scan showed moderate enhancement of the lesions.

Digital subtraction venography of the orbits was performed subsequently via puncture of a frontal vein and injection of a non-ionic contrast medium during manual compression of the infraorbital veins. Orbital venography showed that the varices originated from the superior ophthalmic veins (Fig. 4).

No specific therapy has been advocated. The patient has only been asked to refrain from trauma and certain body postures which might induce intraorbital

Fig. 1. Coronal T1-weighted MR image shows bilateral, intermediate signal intensity retrobulbar lesions.

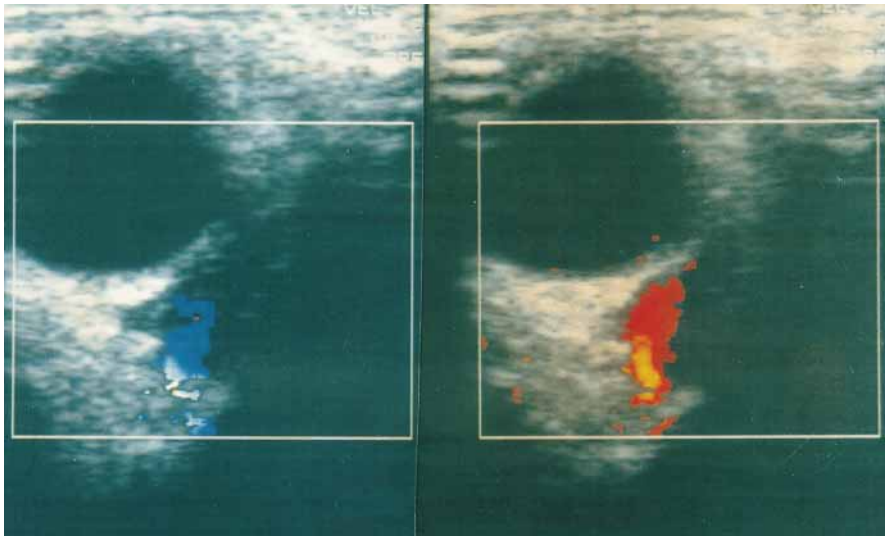

Fig. 2. Color Doppler ultrasonography of the left orbit demonstrates a retrobulbar mass that exhibits antegrade venous drainage (arbitrarily designated as blue). Color flow image obtained during the Valsalva maneuver shows retrograde venous flow (red).

Fig. 3. a: Axial CT image shows well-circumscribed retrobulbar lesions. b: After Valsalva maneuver, the lesions increased in size.

venous pressure increase. The patient continues to have stable findings after 22 months of follow-up.

Discussion

Orbital varix usually originates from the superior ophthalmic vein, probably due to a congenital weakness of the vascular wall. It can be demonstrated by orbital venography as a saccular dilatation of a single vein or a mass of tortuous vessels (Lloyd 1975). Orbital varix is seen infrequently. In a report by Gunalp & Gunduz (1995), of the 85 orbital vascular tumor cases 3 (3.5%) were varices. Bilateral orbital varices are quite rare (Safran et al. 1984). In the reviewing study of 158 patients with orbital venous anomalies which include both lymphangiomas and primary orbital varices, Wright et al. (1997) did not report any bilateral lesions.

The typical clinical picture of orbital varices is unilateral intermittent proptosis. However, our patient had no complaint of proptosis. We believe that he was not aware of this sign, probably because it was bilateral, and clinically not very evident. He complained of periocular fullness and pressure appearing with bending forward. In the report of Wright et al. (1997), pain was the main initial symptom unrelated to orbital hemorrhage or thrombophlebitis in 3 of 158 patients with orbital venous anomalies, whereas Valsalva induced pain was recorded in 8.

The proptosis measured by Hertel exophthalmometer in our patient was less than that by CT measurement. This difference might be due to the fact that the CT images were taken while performing a sustained Valsalva in a supine position. The decreasing venous return in the supine position may cause a further increase in the intraorbital venous pressure during Valsalva. Rubin & Remulla (1997) observed that the lesions in two of three patients enlarged with Valsalva maneuver on spiral CT imaging, whereas Hertel exophthalmometer did not show any detectable proptosis. The presence and the degree of Valsalva induced proptosis documented by Hertel exophthalmometer may not reflect the extent of the lesion's connection to the venous system. Therefore, CT, color Doppler US or orbital venography may better reflect the venous connection of the lesions than clinical examination.

An important complication of orbital varices is orbital hemorrhage that causes decreased visual acuity due to compression of the optic nerve (Wright et al. 1997). Rootman & Graeb (1988) reported that nondistensible varices have minimal or no connection to the venous system and therefore they would not be expected to cause positional proptosis. These lesions contain stagnant blood flow that can lead to thrombosis, hemorrhage, or both. Wright et al. (1997) did not find any significant correlation between the results of Valsalva test and the frequency of hemorrhage in these lesions. The lesions in our patient showed large venous connections which could be radiologically

Fig. 4. Orbital venography shows varices arising from the superior ophthalmic veins.

demonstrated. He had no history consistent with hemorrhage or thrombosis and the clinical findings were stable during 22 months of follow-up.

Different radiological methods can be used in the diagnosis of the orbital varix (Lieb et al. 1990; Wildenhaim et al. 1991). Magnetic resonance, the first performed radiological study in our patient, demonstrated bilateral retrobulbar masses. It was difficult to distinguish the lesions from possible intraorbital neoplasms. By showing signal void from rapid flow within the dilated veins, MR can indicate the vascular nature of the lesion (Axel 1984). But, distended varices with slow flow or stagnant blood can appear as soft tissue masses on MR images as in our case. Color Doppler US disclosed the vascular nature and dynamic changes of the lesions during the Valsalva maneuver. Computed tomography showed enlargement of the lesions during Valsalva. On the basis of these radiographic findings, the possible diagnosis of orbital varices was established. Orbital venography finally confirmed the diagnosis. Magnetic resonance and CT clearly demonstrated the location and the extent of the soft tissue masses of the varices. Since MR is very susceptible to motion which causes artifact reducing image quality, MR images obtained with Valsalva maneuver may be unsatisfactory.

Color Doppler US, a non-invasive procedure which provides the dynamic evaluation of flow without the need for any contrast material, may be used as the initial screening test in cases of suspected orbital varix (Wildenhaim 1991). Computed tomography scanning at rest and during Valsalva maneuver can facilitate the diagnosis. Although orbital venography was considered the most useful diagnostic method, it has been almost abandoned in the diagnostic assessment of vascular lesions of the orbit with the advent of high-resolution CT. Any of these radiological methods may lead to a false-negative result in some cases (Rivas et al. 1982; Wright et al. 1997). In such a case, the other can provide the diagnosis.

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