Bilateral superior ophthalmic vein thrombosis in a case of viral meningo-encephalitis:
A case report and review of literature

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Abstract

Superior ophthalmic vein thrombosis may be unilateral or bilateral and may or may not be associated with cavernous sinus thrombosis. Thirty-year old male presented with headache, altered sensorium and mild neck stiffness. He had conjunctival congestion and mild restriction of ocular movements on examination without any orbital bruit. No visual impairment or field defects were noted. CT and contrast MRI of the brain were normal. MRI sections from orbits showed bilateral superior ophthalmic vein thrombosis. CSF showed mild pleocytosis (mostly lymphocytes) confirming diagnosis of viral meningo-encephalitis. CSF gram stain and culture were negative. He recovered after 2 weeks and conjunctival congestion resolved completely. This case illustrates the need for awareness of this rare entity.

Keywords: Superior ophthalmic vein thrombosis, Magnetic Resonance Imaging, meningo-encephalitis

Introduction

Superior ophthalmic vein thrombosis may be caused by local infections, drug intake or with cavernous sinus lesions like meningioma, dural arterio-venous fistulae (AVF) or rarely with sinus pericranii [1 - 8]. It may be isolated or with involvement of cavernous sinuses usually due to infective causes. Unilateral thrombosis can occur due to local infection from the orbit itself or from the adjacent paranasal sinuses [1, 2]. Bilateral involvement has been reported due to systemic infective causes, contraceptive intake or coagulopathy [3, 4, 5]. Many cases have been shown to resolve without any permanent effect on vision, but some cases have shown visual loss due to orbital edema associated with venous congestion resulting in optic nerve compression or occasionally the central retinal artery occlusion [9]. We report a case of bilateral superior ophthalmic vein thrombosis in a thirty-year-old male presenting with features of viral meningitis.

Case Report

Forty-two year old male was brought with altered sensorium preceded by headache and fever. On examination, he was confused and had mild neck stiffness. He had conjunctival congestion and mild restriction of extra-ocular movements in all directions. No orbital bruit was heard. No other cranial nerve deficits or motor or sensory disturbances noted. Fundus examination showed no evidence of papilledema or retinal hemorrhages. Clinical diagnosis of meningitis with possibility of cavernous sinus thrombosis was thought of. Plain and contrast CT of the brain was done and appeared normal. CSF showed increased number of cells (mostly lymphocytes) with normal protein and glucose suggestive of aseptic/viral meningo-encephalitis. As conjunctival congestion was persistent, MRI was done after four days when his sensorium improved to rule out cavernous sinus thrombosis and it showed normal study of brain. Orbital sections showed bilateral linear serpiginous T1/T2 hyperintense lesions inferior to superior rectus-levator palpebrae superioris within the muscle cone above the optic nerves, suggestive of thrombosed superior ophthalmic veins (Fig 1).
No cavernous sinus enlargement or non-enhancing foci noted (Fig 2). No other flow-voids noted. The patient improved and was discharged with reduction in the conjunctival congestion. On follow-up after 2 months, the congestion cleared completely with normal ophthalmological examination.

Figure 2a & b. Post-contrast T1-weighted coronal and axial images showing normal cavernous sinuses (arrows) without any enlargement or convexity.
Discussion

The differential diagnosis for patients presenting with peri-orbital swelling, proptosis and conjunctival congestion with or without restriction of ocular movements or visual impairment include – orbital cellulitis, cavernous sinus thrombosis, carotico-cavernous fistula (CCF) and rarely superior ophthalmic thrombosis. Bruit may be present in direct type of CCF but not in indirect types. Superior ophthalmic vein thrombosis has also been reported with paradoxical worsening of treatment of dural AV fistulae [10, 11].


Cavernous sinus and superior ophthalmic vein thrombosis may present with similar symptoms and imaging is done mainly to look for and rule out cavernous sinus thrombosis. Superior ophthalmic vein may be dilated or thrombosis may extend to involve them. Superior ophthalmic vein enlargement without thrombosis can occur in many cases of cavernous sinus thrombosis and other orbital pathologies.

Khanna RK et al [14] reported enlargement of superior ophthalmic vein in diffuse cerebral swelling that resolved with resolution of cerebral swelling and elevated intracranial pressure. Mere enlargement has been reported from various orbital lesions apart from cavernous sinus thrombosis and diffuse cerebral swelling [15]. In MRI, enlarged superior ophthalmic vein without thrombosis appears like any other vascular structure – as flow-void in T1- and T2-weighted sequences.

Thrombosed vein shows intraluminal signal changes depending on the stage of thrombus [16]. Acute thrombus (upto one week) appears isointense in T1-weighted images and hypointense in T2-weighted images. Subacute thrombus shows hyperintensity in both T1- and T2-weighted images. In the current case, MRI images showed thrombus to be slightly hyperintense in both T1- and T2-weighted images suggesting subacute thrombus.

Walker et al [17] in their review of superior ophthalmic vein thrombosis due to orbital cellulitis discussed the benefits and risks of anti-coagulating these patients. Hsu et al [9] reported the only reported adverse outcome of combined retinal artery and vein thrombosis in a case of superior ophthalmic vein thrombosis.

There have been reports of superior ophthalmic vein thrombosis due to oral contraceptives that resolved with discontinuation of contraceptive intake [4]. Michaelidas [3] reported a 36-year-old female on oral contraceptives presenting with redness, proptosis and restricted ocular movements. Doppler study of orbits showed superior ophthalmic vein thrombosis and hematological work-up showed elevated Factor VII. Patient was treated with aspirin after stopping the contraceptive intake resulting in improvement. Abruzzo et al [18] reported 40-year-old female of lupus erythematosus presenting with vision loss and imaging workup showed superior ophthalmic vein thrombosis.


Diffusion restriction has been noted in thrombosed superior ophthalmic veins both due to infective and non-infective causes [7, 20]. Similar restriction in cases of cerebral venous thrombosis has been reported to predict low rate of vessel recanalization on follow-up [21]. It can have implications for the management of superior ophthalmic vein thrombosis as anti-coagulant treatment may be started if there is diffusion restriction within the thrombosed superior ophthalmic vein.

Due to fewer number of cases of superior ophthalmic vein thrombosis reported, many of the questions like – whether to start anti-coagulation or not, to do diagnostic angiography to rule out indirect carotico-cavernous fistula in aseptic causes or not - remain unanswered.
References


