A dural cavernous sinus fistula can cause a number of different ocular findings. We report a case of dural cavernous sinus fistula causing an isolated macular exudative detachment.

Report of a Case. An 84-year-old woman was initially seen because of a 1-month history of diplopia and left periorbital pain. She had well-controlled hypertension and a history of a rhegmatogenous retinal detachment in the right eye, which was repaired 10 years previously. There was no history of trauma.

Her visual acuity was 20/60 OD and 20/25 OS. Hertel exophthalmometry was 15 mm on the right and 18 mm on the left. Supraorbital bruits were present bilaterally. Episcleral vessels were tortuous in the left eye. The right fundus had dry macular pigmentary changes. The left fundus was normal. Orbital Doppler imaging revealed arterialization of blood flow in both superior ophthalmic veins; the arterial pulse wave was consistent with bilateral, low-flow dural cavernous sinus fistulas.

She returned 1 week later with worsened diplopia. There was now arterialization of the conjunctival vessels in both eyes along with a new 40–prism diopter esotropia. Repeat orbital Doppler ultrasonography showed further spontaneous improvement in orbital flow bilaterally. During the ensuing 2 months, the remainder of the ocular signs and symptoms completely resolved.

Comment. Our patient had the unique finding of an isolated exudative macular detachment, in addition to many of the classic external ocular features of a spontaneous dural cavernous sinus fistula. There have been reports of peripheral exudative retinal detachments in patients with cavernous sinus fistulas, but these were associated with choroidal detachments.

We propose the following mechanism to explain the pathogenesis of this serous macular detachment. Patients with cavernous sinus fistulas develop arterialization of the orbital veins. This arterialization causes venous stasis, which then leads to hypoxia of the choriocapillaris and subsequent macular exudative retinal detachment.

Macular Exudative Retinal Detachment in a Patient With a Dural Cavernous Sinus Fistula

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Figure 1. Early-phase (A) and late-phase (B) fluorescein angiography photographs showing mild, late, diffuse choroidal-based leakage in the region of the serous detachment.
impairment of retinal pigment epithelial cell function. Dysfunction of the choriocapillaris and retinal pigment epithelium has been shown to lead to retinal detachment. On normalization of orbital venous outflow, the choriocapillaris and retinal pigment epithelial function returns to normal, and the serous retinal detachment resolves.

To our knowledge, this is the first reported case of serous macular detachment initially seen without clinically evident choroidal detachment in a case of a dural cavernous sinus fistula. Dural cavernous sinus fistulas should be included in the differential diagnosis of isolated exudative macular detachments. Resolution of the macular detachment with visual improvement is possible if the hemodynamic abnormality normalizes.

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**Figure 2.** A, Ocular coherence tomography showing a neurosensory retinal detachment of the macula. B, Follow-up ocular coherence tomography showing complete resolution of the macular retinal detachment with normalization of the foveal contour.