



Occlusion Of The Ophthalmic Artery Revealing Thrombosis Of The Cavernous Sinus: A Case Report

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Abstract: Ophthalmic artery occlusion is a partial or complete obstruction of the artery, which can lead to severe ischemia of the globe and associated ocular tissues. It is a formidable entity, rarely described in the literature, and may represent a major indicator of a severe systemic, embolic, inflammatory or infectious disorder in the context of cavernous sinus thrombosis. The severe picture is marked by painful ophthalmoplegia.

These acute, symptomatic occlusions represent urgent ophthalmic situations requiring rapid assessment and management.

Index Terms - ophthalmic artery- cavernous thrombosis- ethmoiditis -antibiotherapy.

Introduction:

Ophthalmic artery occlusion (OAO) is a rare entity, leading to severe ischemia of the globe and associated ocular tissues. It presents with a sudden drop in visual acuity, but clinical signs may vary depending on the etiology and location of the occlusion. Most often secondary to vascular causes, it is a major indicator of a severe systemic, embolic, inflammatory, infectious or other disorder that may require urgent management.

We report the case of a patient who presented with a clinical syndrome of occlusion of the right ophthalmic artery revealing thrombosis of the cavernous sinus.

Clinical case:

This 48-year-old patient, with no history of cardiovascular risk factors, presented to the emergency department with unilateral right fronto-orbital headaches associated with ptosis, which had been present for a week and were complicated on the day of consultation by a drop in visual acuity.

Ophthalmological examination revealed negative visual acuity in the right eye, complete ptosis, preserved ocular motility, and frontal and corneal anesthesia. The fundus showed extensive ischemic white retinal edema with diffuse arterial narrowing (Figure 1). Examination of the left eye was unremarkable.

Fluorescein angiography showed an obvious delay in choroidal filling and a delay in arterial perfusion with papillary hypo-perfusion (figure 2).

Biological workup revealed an inflammatory syndrome with a sedimentation rate of 112 mm and CRP of 102 mg/l, hyperleukocytosis of 13,000/ul with PNN predominance, and diabetes with HbA1c glycated at 13.9. Blood culture isolated multi-resistant coagulase-negative staphylococcus.

Cardiovascular examination and ultrasonography of the vascular axes of the neck revealed no abnormalities. The angio-MRI showed thrombosis of the right cavernous sinus on ethmoiditis complicated by occlusion of the right ophthalmic artery, with grade 1 exophthalmos (figure3).

The patient was started on parenteral bi-antibiotic therapy, subsequently adapted to the antibiogram data, and anticoagulant therapy.

Discussion:

Retinal circulation is ensured by the central retinal artery, and choroidal circulation by the posterior ciliary arteries, both derived from the ophthalmic artery. In the event of pathology affecting its origin [1], all retinal (inner and outer) and choroidal layers are affected, as are the ocular adnexae. The severity of ophthalmological damage [2] and its functional consequences vary according to the vascular location of the occlusion and the pathophysiological mechanism. The clinical picture also depends on upstream blood flow and any vascular collaterals or orbital anastomoses [3].

An OAO is a partial or complete obstruction of the ophthalmic artery (branch of the internal carotid artery) and may lead to severe ischemia of the affected globe and associated ocular tissues.

In contrast, the presenting visual acuity for an OAO is usually hand motion, light perception, or no light perception. This poor visual acuity is due to the location of the obstruction, which is proximal to the branch point of the ciliary arteries that provide flow to the choroid and portions of the optic nerve. Ophthalmic and central retinal artery occlusions will have a relative afferent pupillary defect (RAPD) that is commensurate with the degree of ischemia. For example, a more complete occlusion that does not reopen and remains occluded for a longer period of time is more likely [4].

Ophthalmic artery occlusions are usually located proximal to both the branch point of the general posterior ciliary arteries (choroidal supply) and central retinal artery (retinal supply). In a patient with an OAO, the central retinal artery and ciliary arteries that supply blood flow to the choroid are obstructed, and vision is profoundly reduced. On funduscopic examination, a cherry red spot may not be detected because both the choroid and the retinal circulations are ischemic, with little vascular flow to the entire retina, including the foveal region. When the circulation of the optic disc is involved, there may be optic disc edema. A fluorescein angiogram (FA) will help demonstrate both retinal vascular occlusion as well as broad areas of choroidal nonperfusion. A dark ring of both choroidal and retinal nonperfusion surrounding the optic nerve may be seen in OAO as well as lobular or triangular areas of patchy choroidal nonperfusion (as is seen with GCA). The posterior pole or ischemia, also referred to as Amalric's triangle, peripheral areas of triangular is a reflection of the choroidal vascular flow distribution. They may have a more prominent RAPD [4].

The etiologies of ophthalmic artery occlusion can be classified into three categories [8]. Vascular causes include arterial dissection, cavernous sinus thrombosis and embolization, notably by various injectable facial cosmetic agents. Other causes include orbital compression (mucormycosis, trauma) and elevated intraocular pressure (intravitreal injection). Rupture of an ophthalmic artery aneurysm is extremely rare [5],

Cavernous sinus thrombosis is a rare infectious thrombophlebitis, caused by regional infections such as serous otitis media, pharyngitis, sinusitis as in our patient's case, or a facial skin infection. The most common symptoms are fever, headache and orbital symptoms such as ptosis and ophthalmoplegia. Antibiotic therapy is the cornerstone of treatment, accompanied by surgical drainage of the purulent collection. We administered anticoagulant therapy to prevent prolongation of cavernous sinus thrombosis, although evidence supporting its use is limited. A contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI) scan is required for diagnosis [6-7].

The course of the disease can be dramatic, due to the intracranial extension of the thrombotic and infectious process, local vascular complications or generalization of the septic condition. Despite advances in treatment, the mortality rate is still high, currently around 30-40%. Less than half of patients recover without sequelae. Early diagnosis and urgent treatment are therefore essential [8].

Conclusion:

Ophthalmic artery occlusion is a very rare condition with a poor prognosis. The clinical picture points to the location and etiology of the occlusion. It requires an exhaustive etiological work-up to prevent a functional visual emergency from turning into a life-threatening one.

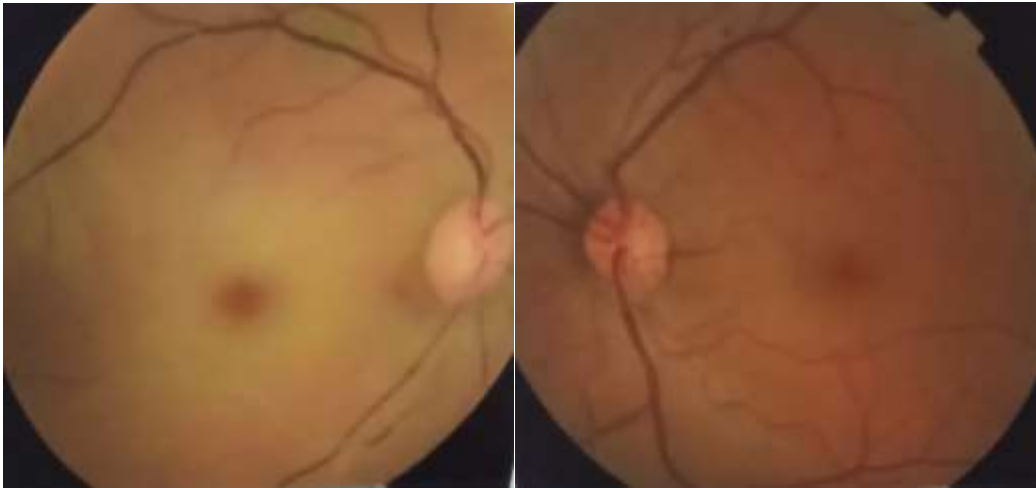


figure1: fundus image showing diffuse ischemic retinal edema of the right eye with normal left eye

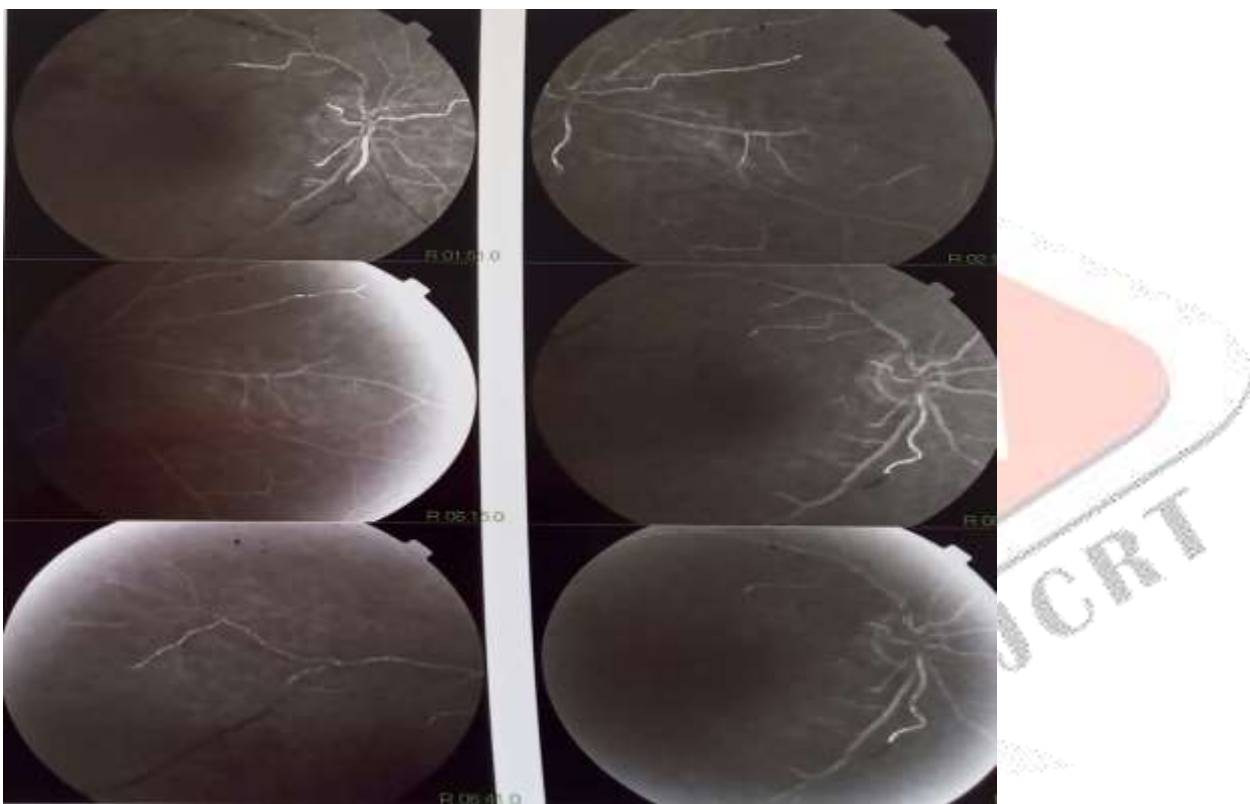


figure2: fluorescein angiography showing delayed choroidal and retinal perfusion on different angiographic sequences

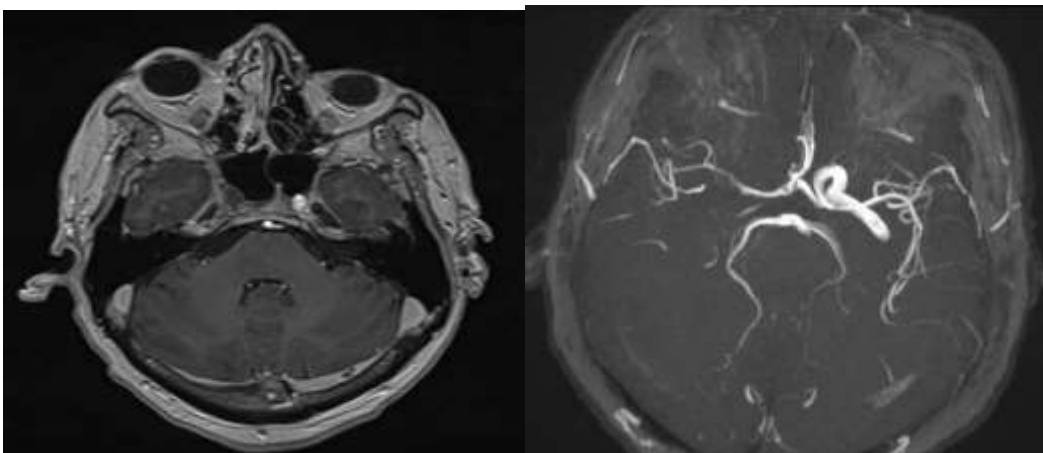


figure3: MRI and angio-MRI cross-section showing thrombosis of the right cavernous sinus on ethmoiditis complicated by occlusion of the right ophthalmic artery, with grade 1 exophthalmos

Conflicts of interest:

All authors declare that they have no conflicts of interest.

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