Ocular Ischemic Syndrome : A Case Report

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Abstract

Ocular ischemic syndrome (OIS) is a consequence of a potentially serious condition of carotid artery stenosis. Signs of ocular ischemic syndrome is therefore one of the earliest presentations that can help ophthalmologists to reach a concrete diagnosis and early intervention, thereby preventing possibly life and sight-threatening consequences.

Key Words: *ocular ischemic syndrome, retinal ischemia, carotid artery stenosis.*

Case Presentation

A 49-year-old gentleman with history of diabetes and hypertension presented with gradual decreased vision in the left eye for more than five months. The best-corrected visual acuity of the right eye was 6/6, N5 and left eye was 6/9p, N5. Fundus examination of right eye showed normal findings and left eye revealed scattered dot and blot hemorrhages and micro aneurysm in all four quadrants (Fig: 1 and 2).

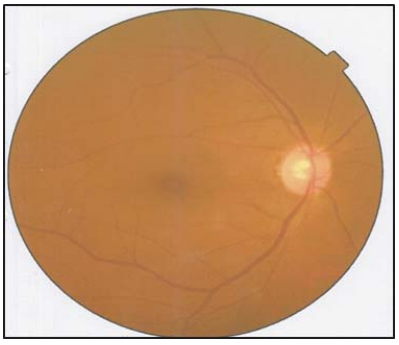


Figure 1 (R/E) Normal fundus

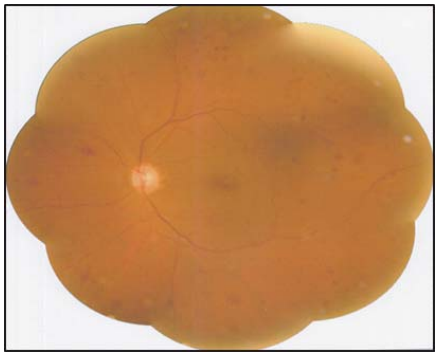


Figure 2(L/E) Dot blots hemorrhage and micro aneurysm

Fundus Fluorescein angiography (FFA) exhibited left sided delayed choroid filling; Optical coherence tomography (OCT) left eye revealed normal findings (Fig 3). Blood count and blood biochemistry were within normal limit. Therefore, diagnosis of Ocular Ischemic Syndrome (OIS) was suspected in left eye. Doppler ultra-scan of carotid artery showed complete obstruction of left internal carotid artery (Fig: 3A). Carotid

angiography confirmed complete occlusion of left internal carotid artery (LICA) with 70% stenosis of right vertebral artery (RVA) ostium (Fig. 4A and 4B).

So, the patient was referred to an interventional neurologist. A successful PTA to RVA carotid artery angioplasty along with carotid stenting was performed without any residual stenosis or dissection (Fig 5). On a follow-up visit, two months later, patient reported no visual complaint and he had a visual acuity of 6/6, N5. (Fig 6 and 7A, B)

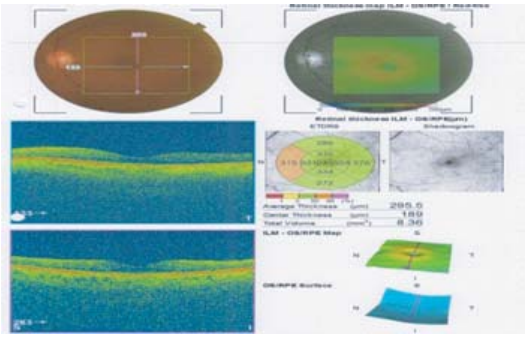


Figure 3 OCT (L/E), before treatment

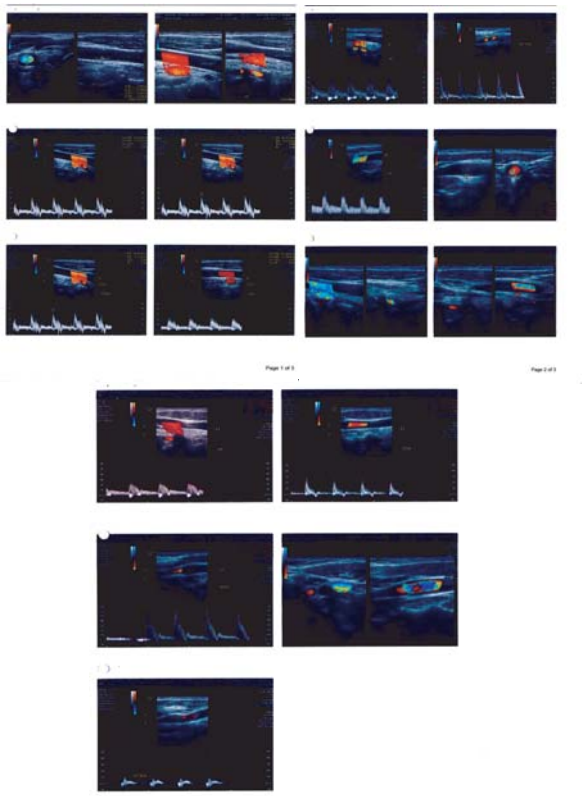
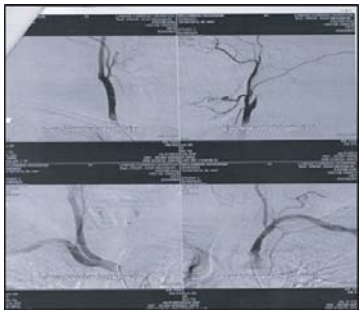


Figure 3A Doppler Ultrasound Scan of Carotid Artery



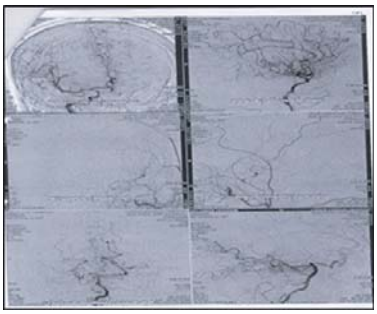


Figure 4A and 4B: Carotid Angiogram and Cerebral Angiogram

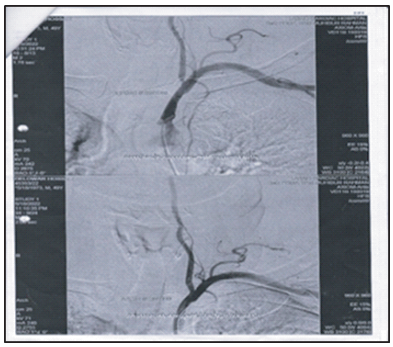


Figure 5 Carotid Stenting

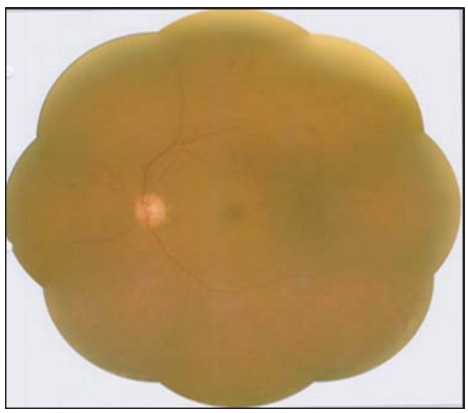


Figure 6 CFP L/E (2 months After stenting)

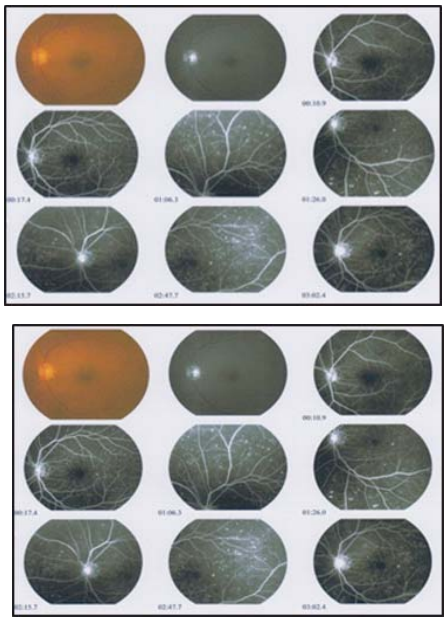


Figure 7A and 7B: FFA after Treatment

Discussion

OIS comprises the ocular signs and symptoms attributable to chronic ocular hypo perfusion secondary to severe occlusion of the internal carotid artery. Ocular findings may be the only manifestation of carotid occlusive disease, although half of patients with OIS also have severe cardiovascular disease. Five-year mortality among patients with OIS is around 40%, with two-thirds of the deaths caused by myocardial infarction and one-third by stroke. Thus, timely diagnosis is necessary to reduce cardiovascular cosequences as well as to prevent permanent vision loss [1].

The most common symptom of OIS (in 67%-90% of cases) is gradual vision loss that develops over weeks to months. Anterior segment signs include NVI (60%-66%) and anterior chamber cells or flare (20%-50%). Other findings include synechiae, hyphema, asymmetric cataract, conjunctival injection, and corneal edema. Posterior segment manifestations include narrowed retinal arteries (90%); dilated but not tortuous retinal veins (90%); retinal hemorrhages (80%); micro aneurysms (80%); and, less frequently, cherry-red spot (12%); macular edema; or neovascularization of the optic nerve head (35%), retina (8%), or both. The retinal hemorrhages associated with OIS are typically round and deep and are most often located in the mid periphery, although they can also be found in the posterior pole [2].

OIS is most frequently misdiagnosed as central retinal vein occlusion (CRVO) or diabetic retinopathy. Vision loss is typically acute in CRVO and chronic in diabetic retinopathy and OIS. In CRVO, the veins are both dilated and tortuous, unlike OIS, in which the veins are dilated but not tortuous. Dilation of veins is often attributed to an inflow obstruction, while the tortuosity seen in CRVO is chiefly due to an outflow obstruction [3].

Retinal hemorrhages are often present throughout the retina in CRVO and are most prominent in the posterior pole in diabetic retinopathy. In contrast, the retinal hemorrhages in OIS are most prominent in the mid periphery [4]. In this case, the patient exhibited chronic vision loss, scattered dot blot hemorrhages and micro aneurysm at the mid periphery of all four quadrants of the left eye, despite his Diabetes Mellitus being well-controlled. The above findings correspond to those in OIS, for which the disease was suspected, and the patient was sent for further investigations.

Carotid imaging is the most important modality to support a diagnosis of OIS. Carotid duplex ultrasound (DUS) is the most commonly performed initial diagnostic test, as it is accurate, noninvasive, low cost, and widely available [5].

The definitive treatment for OIS due to stenosis is carotid artery reperfusion surgery by means of carotid artery endarterectomy (CEA) or stenting. Thus, when the ophthalmologist suspects OIS, the patient should be referred to the primary care physician for appropriate coordination of care with the vascular surgery service [6].

In conclusion, a detailed workup is merited in all patients with ocular ischemia in order to detect other systemic associations such as carotid or coronary occlusive disease, atherosclerosis,

hypertension and diabetes mellitus. A thorough ophthalmic examination and carotid examination is warranted to save a patient's life and sight.

References

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