

# Central Retinal Artery Occlusion in a Young Male - A Case Report and Review of Literature

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**Abstract:** Central retinal artery occlusion is abrupt diminution of blood supply via central retinal artery to the inner retina which leads to sudden painless loss of vision. Here we are presenting a case report on central retinal artery occlusion in a young male. This case is remarkable as it is a rare presentation where atherosclerosis is responsible for central retinal artery occlusion in young patient.

**Keywords:** central retinal artery occlusion (CRAO), young age, atherosclerosis, fundus fluorescein angiography, carotid Doppler

## 1. Introduction

CRAO is most common in elderly age group where atherosclerosis and vasculitis are the most common causes. In younger age group other causes like local trauma, radiation retinopathy, orbital inflammatory conditions and systemic coagulopathies has to be ruled out in addition to atherosclerosis, arterial spasms and dissecting aneurysms. It is more common in males and accounts for 1 in 10,000 patients.(1)

## 2. Case Report

A 32 year old male, farmer by profession presented with sudden, painless fall of vision in right eye of 4 days duration which was associated with right sided headache followed by total loss of vision within few hours. He is a known hypertensive since 2 years with irregular medication. He is a known smoker since 10 years, smokes 10 cigarettes per day. He had previous attack of right upper arm weakness 1 month back and became normal with medication. No previous episodes of amaurosis fugax and not a known diabetic.

On examination best corrected visual acuity by Snellen's chart was only perception of light in right eye and 20/40 with -1.50 sphere in left eye. External and slit lamp examination of both eyes were unremarkable except for 'relative afferent pupillary defect' in right eye. On fundus examination of right eye-media is clear, optic disc is normal, blood vessels-arterial narrowing present, foveal reflex is altered due to cherry red spot and posterior pole is pale and is haemic. Fundus examination is within normal limits for left eye except for arterial narrowing.

Intra ocular pressure is within normal limits in both eyes. Visual field examination and colour vision testing are precluded in right eye due to poor vision and are normal in left eye.

Vital data-Temperature is normal, pulse rate-70/min, respiratory rate is 12/min and blood pressure-160/90 mm of Hg. Neurological examination is normal.

## 3. Investigations

**Fundus Fluorescein Angiography**-Delayed arterial filling is seen and blocked choroidal hyperfluorescence due to retinal edema is observed in right eye.

**Haematological Investigations**-All the blood investigations including FBS, PPBS, TC, DC, ESR, Blood urea, Serum creatinine, Serum bilirubin, SGPT, SGOT, Alkaline phosphatase, Lipid profile and viral markers including HIV, HBs Ag and HCV are within normal limits.

**On cardiovascular evaluation-**  
**2D ECHO** is normal

**Carotid Doppler Ultrasonography**- Right Common Carotid Artery shows mixed echogenicity completely occluding the lumen, extending into internal carotid artery. There is 2 x 0.2 cm echogenic plaque in right carotid artery with 20-30% narrowing and common carotid artery is showing high bifurcation. On impression complete occluding thrombus in right COMMON CAROTID ARTERY extending into INTERNAL CAROTID ARTERY.

**CT BRAIN PLAIN**- shows patchy hypodense area noted involving cortex and white matter in right temporo-parietal region. Impression is right MIDDLE CEREBRAL ARTERY territory infarct and gliotic changes in left parietal region. Lacunar infarct is seen in left caudate nucleus.

## 4. Discussion

CRAO is described as acute stroke of the eye and is an ophthalmic emergency. Van Graefe in 1859 first described central retinal artery obstruction as an embolic event to retinal artery in patient with endocarditis.(2) In 1868, Mauthner suggested that spasmodic contractions lead to central retinal artery obstruction. Sudden cessation of blood supply to inner retina leads to pyknosis of ganglion cells which gives pale white appearance of posterior pole and cherry red spot. It describes the appearance of a small circular choroid shape as seen through the fovea centralis. Its appearance is due to a relative transparency of the macula. The sign was first described as 'cherry red spot' by Warren

Tay, in 1881, with reference to a patient with Tay-Sachs disease(3).

Commonly CRAO is secondary to emboli. Generally emboli may originate from atheromatous plaque in the ascending aorta or carotid arteries.(1)Most common site of occlusion is at the level of lamina cribrosa.Vision in CRAO patients at the time of presentation is usually less than 20/800,but in 14% of general population, 25% of eyes with acute CRAO, because of presence of cilioretinal artery the visual acuity even in presence of acute CRAO is equal or more than 20/50.(4)

According to HYRAEH irreversible injury occurs after 90-100 min in primate models. But there is controversy regarding optimal window of treatment in humans is 6-24 hours.(5)Immediate treatment for CRAO includes ocular massage by fundoscopic lens and paracentesis with 30 gauge needle. If hyperbaric oxygen can be given within 2 hours of obstruction it may lead to reperfusion and improvement of vision. Finding of retinal artery obstruction generally merits a complete systemic workup to look for etiological factors, upto 90%of affected patients have evidence of systemic disease. (6)Management of CRAO is

not only to restore vision but at same time to manage risk factors that may lead to other vascular conditions, as Lorentzen noted a survival time of 5.5 years in people with CRAO ,as compared to an expected survival of 15.5 years in age matched population.(7)

## 5. Conclusion

In our patient the emboli in right eye probably originated from the atheromatous plaque in the ipsilateral internal carotid artery. Patient was consulted with cardiologist and was advised with carotid endarterectomy to avoid further vascular insults. And he is prescribed with ATORVASTATIN 40 mg and ASPIRIN 150 mg,as they play role indirectly for secondary prevention of further end organ ischemia and is prescribed TELMISARTAN 40 mg for hypertension. As the patient is young and bread winner of the family to prevent further vascular insults counselled for strict usage of medication and advised to stop smoking. He was also advised for regular follow ups to prevent painful blind eye due to neovascular glaucoma.



**Figure 1:** (a)Right eye fundus picture showing CHERRY RED SPOT and pale posterior pole,(b)FFA of right eye showing delayed arterial filling and blocked choroidal hyperfluorescence.



**Figure 2:** (a)Carotid doppler ultrasonography showing mixed echogenicity of right CCA,(b) complete occluding thrombus in right CCA extending into ICA.

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