

## CASE REPORT

# EMERGENCY TREATMENT FOR CENTRAL RETINAL ARTERY OCCLUSION (CRAO)

**Nida Farida**

Ophthalmology Department, Faculty of Medicine, Universitas Islam Negeri Syarif Hidayatullah Jakarta  
AINI EYE Hospital

Corresponding Author: [nidaf2007@yahoo.com](mailto:nidaf2007@yahoo.com)

### ABSTRACT

Central retinal artery occlusion (CRAO) is a blinding event but not considered as a common emergency problem. Since awareness of the case is low, patients usually come to the ophthalmologist later than the golden period and having the worst prognosis. We report the case of patient with a central retinal artery occlusion that had visual improvement after emergency treatment.

A 47-year-old woman with no comorbidities presented with symptoms of a sudden blurred vision, no pain or redness in the right eye (RE). Best-corrected visual acuity in the RE

was 1/60. A relative afferent pupillary defect was observed in the RE. Ocular fundus examination of RE was suggestive of CRAO. Emergency treatment were performed, including rebreathing of expired CO<sub>2</sub>, ocular massage and ocular chamber paracentesis. One week later, the visual acuity was improved.

This case highlights that fast and accurate response in acute management of CRAO should be conducted, especially within the golden hours which is less than 6 hours after the accident, to prevent permanent visual loss of the patient.

**Keywords:** central artery retina occlusion, emergency

### INTRODUCTION

Central retinal artery occlusion (CRAO) is a blinding event, in which patients usually present sudden and profound unilateral vision loss. However, both of patients and many health practitioners usually do not recognize this event as a common emergency problem, thus patients may come late to the ophthalmologist.<sup>1</sup>

The management of CRAO is time dependent. Within the golden period of the acute phase, prompt evaluation of cerebrovascular comorbidities is needed to minimize the risk of other ischemic events. Despite its futility prognosis, fast action and management should also be given to prevent permanent visual loss.<sup>1,2</sup>

We report a patient with CRAO that had been improved in visual acuity after emergency treatment with rebreathing of expired CO<sub>2</sub> with plastic bag, ocular massage and ocular chamber paracentesis.

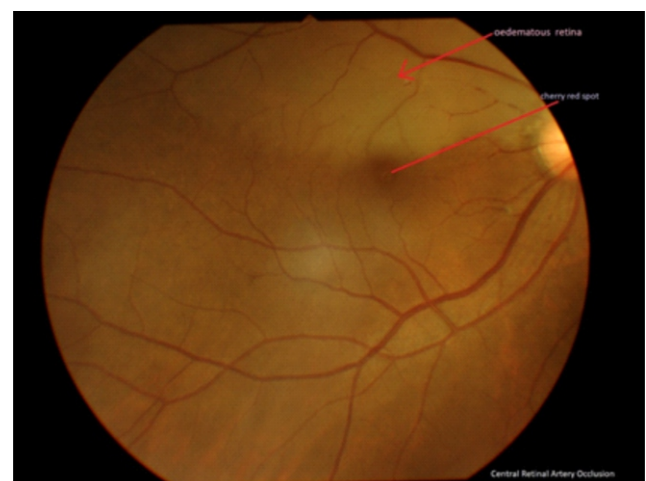
### CASE ILLUSTRATION

A 47-year-old woman complained a sudden blurry vision without pain or redness on right eye since 5 hours before coming to the hospital. There was no history of hypertension, cardiovascular disease, diabetes mellitus or

other cerebrovascular diseases. She also had no cigarette smoking habit.

The eye examination showed that the left eye (LE) examination was within the normal limit. For right eye (RE) examination; the visual acuity was 1/60, non-contact tonometry was 12.3 mmHg. Eyelid, conjunctiva, cornea and anterior chamber were normal, but reflex afferent pupillary defect (RAPD) was positive.

During the ophthalmoscopic examination (Figure 1), we found a whitish and edematous retina. The disc was pallor and retinal vascular were narrowed. It also showed occlusion



**Figure 1. Central Retinal Artery Occlusion**

in superior sided of central retinal arteries. The inferior part of macula area was spared, because of cilioretinal artery still serving that area. Cherry red spot appearance found positive in macula.

Based on the examinations, the patient was diagnosed with CRAO of the RE. She was directly given the acute ophthalmic management, which are:

1. Rebreathing of expired CO<sub>2</sub> with plastic bag
2. Ocular massage. This procedure was achieved by asking the patient to digitally apply pressure to the globe through the closed eyelids of the affected eye for 15 to 30 minutes.
3. Ocular Chamber Paracentesis with 27-gauge needle.

The patient refused to be hospitalized, and preferred to be sent home. She was then treated with acetazolamide 250 mg every 8 hours and compression of the eye.

After one week follow up, the improvement on the RE was seen. Visual acuity on RE was 0.15. Non-contact tonometry was 10.1 mmHg. There were also no complications such as neovascularization, neovascular glaucoma or phthisis bulbi. She was then sent to the internist for evaluation of cardiovascular diseases.

## DISCUSSION

Sudden loss of vision is a common presentation in ocular emergency department. However, CRAO events only accounts for a substantial proportion of cases. Fast and accurate response in acute management of CRAO should be conducted, especially within the golden hours which is less than 6 hours of onset.

First and foremost, when CRAO patient was found, cerebrovascular diseases should be identified to prevent secondary ischemic event. In this case, the patient diagnosed had no history of any systemic disease. The risk of events such as ischemic stroke or myocardial infarctions are less likely to happened, thus treatment can be directly focused on the ocular management.

The treatment of CRAO should be done in preferably 6 hours of onset. The options can be categorized as conservative (ocular massage, pharmacological treatment, anterior chamber paracentesis) or invasive (catheterization of the proximal ophthalmic artery through the femoral artery with the infusion of thrombolytic agents). However, to date, no satisfactory therapy is available for patients with this disorder<sup>3,4</sup> and in most cases, therapy is not successful<sup>1,2</sup>.

In this patient, rebreathing of expired CO<sub>2</sub> with plastic bag was performed together with ocular massage. The ocular massage is achieved by asking the patient to apply pressure

throughout the globe with closed eyelids of the affected eye for 15 to 30 minutes, by her own thumb. Furthermore, ocular chamber paracentesis with 27-gauge needle was performed after 30 minutes of ocular massage because the retinal artery blood flow did not improve. The patient was not given any other invasive procedure, such as thrombolytic agents infusion, because she refused to be hospitalized.

After one week of appropriate treatment and medication, the patient come to the outpatient clinic. She was found to have an improvement of visual acuity (0.15) and ocular pressure (10.1mmHg).

In addition, follow up of the patient is required since the visual recovery prognosis after CRAO therapy is still unsatisfied due to the duration of the occlusion. This may also need multidiscipline collaboration (internist and cardiovascular), since it not only needs visual function monitoring, but also underlying causes management.

## CONCLUSION

It is also known that prognosis of CRAO is quite delicate for most patients. However, that fast and accurate response in acute management of CRAO within the golden hours may prevent permanent visual loss of the patient.

## REFERENCES

1. Hayreh, S.S., Zimmerman, M.B., Kimura, A., Sanon, A., Central retinal artery occlusion. *Experimental Eye Research*. 2014; 78(3): 723–736
2. Sim S, Ting D. Diagnosis and Management of Central Retinal Artery Occlusion [Internet]. *American Academy of Ophthalmology*; 2017 [cited 26 July 2020]. Available from: <http://www.aaao.org/eyenet/article/diagnosis-and-management-of-crao>
3. Rumelt, S., Brown, G. C. Update on treatment of retinal arterial occlusions. *Current Opinion in Ophthalmology*. 2003; 14(3): 139–141.
4. Werner D, Michalk F, Harazny J, Hugo C, Daniel WG, Michelson G, Accelerated reperfusion of poorly perfused retinal areas in central retinal artery occlusion and branch retinal artery occlusion after a short treatment with enhanced external counterpulsation. *Retina*. 2004; 24(4):541–7.