

Homonymous Hemianopia as the Primary Sign of Occipital Ischemic Stroke: A Case Report

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Abstract

Introduction: Homonymous hemianopia (HH) is hemianopia visual field loss on the same side of both eyes.

Case Presentation: A 62-year-old male patient complained about his first episode of sudden narrowing visual field in both of his eyes. He is a heavy smoker with dyslipidemia as his clinical history. His right visual field in both eyes is narrowed, with normal pupillary reflex, normal funduscopy, and normal IOP. We found the right HH in his Humphrey test. Acute infarct lesions in the left occipital lobe left parietal lobe and left temporal superior lobe in the left lateral periventricular region which could match the territory of the left posterior cerebral artery (PCA) and its watershed area were found during MRI-MRA. Aspirin, cilostazol, and statin were immediately given. His visual field gradually improved and he has maintained the treatment for more than 3 months without recurrent symptoms. There is still no standardized treatment for visual deficits in the acute period after a stroke. HH usually improves spontaneously within the first months of injury with the aid of vision training and rehabilitation. However, we prescribed him cilostazol combination treatments to prevent further ischemic damage and reduce the risk of recurrent attack.

Conclusion: This case suggests right HH as the first sign of left occipital ischemic stroke, with promising results using cilostazol combination treatments.

Keywords: Homonymous hemianopia; Ischemic; Occipital; Stroke

INTRODUCTION

Homonymous Hemianopia (HH) is a type of visual field loss with a lesion at the posterior chiasm. HH causes double images or blurred/altered vision, thus can affect the activity of daily living such as reading and driving. This inability to navigate around obstacles may possibly lead to falls or injuries [1]. Stroke is the main cause of HH, with 8%-10% of stroke patients having permanent HH, and 52%-70% of HH secondary to stroke may affect the functional neurological outcome [1-3]. Another etiology of HH are cerebral injuries and cerebral tumors which accounts for 14% and 11% of HH cases respectively [1,4]. The incidence

of stroke and HH is likely to increase as the population ages and stroke patients live longer [1]. However, visual disturbances are often less described and only secondarily targeted during rehabilitation, as the language and motor deficits of stroke are well-known to be addressed as part of early rehabilitation treatment [5]. In patients with HH secondary to stroke, the nature of deficit varies depending on the site of the lesion and part of the visual pathway disrupted [5,6]. Visual field examinations that correlated with another symptom will provide valuable information to determine the location of the lesions. Goldmann perimetry is very useful in detecting the neurologic visual field [7]. However, this examination requires high skilled

technicians and the equipment is not widely available. Another conservative method is confrontation visual field testing, which Kerr et al. reported that it is the least sensitive method [8]. Humphrey automated perimetry is a more sensitive method to detect visual fields and is commonly used and available [9]. The most common site of lesion in HH is the occipital lobe (40%), parietal lobe (30%), temporal lobe (25%) optic tract, and lateral geniculate nucleus/LGN (5%). We aimed to report a case of homonymous hemianopia as the primary sign of occipital ischemic stroke.

CASE REPORT

A 62-year-old male came to the hospital with a chief complaint of sudden narrowing visual loss in both eyes after playing golf. He also had trouble in his activity daily living (ADL), including texting. He was a heavy smoker with a history of dyslipidemia without routine medications. No other risk factors were recorded. His vital signs were normal including his blood pressure. Ophthalmology examination showed a normal visual acuity for both eyes, with a narrowing visual field in his right eye (RE). Pupillary reflex, fundoscopy, and intraocular pressure (IOP) were within the normal limit. Humphrey's test result showed macular sparring and concluded a right congruent HH. A multi-disciplinary team which consists of a neurologist, ophthalmologist, and radiologist was in charge in this case. Laboratory results showed a high level of fibrinogen and LDL, while other parameters were within normal limits. Magnetic Resonance Imaging (MRI) and Magnetic Resonance Angiography (MRA) were performed with the conclusion of acute infarct lesions in the left occipital lobe, left parietal lobe, and left temporal superior lobe in the left lateral periventricular region. The MRA also found moderate-severe left posterior cerebral artery (PCA) stenosis at the border of the P2P-P3 segment and moderate-severe stenosis in the proximal of M2 middle left cerebral artery, with both have flowed at the distal from the stenoses. The patient was then admitted to the hospital and diagnosed with acute ischemic stroke. He was directly prescribed with aspirin 80mg QD, cilostazol 100mg QD, and atorvastatin 40mg QD. He continued the treatment with a series of checkups in 3 months of follow-up care after the discharge and gradually improved his visual field without any recurrent symptoms.

DISCUSSION

The visual pathway begins from retinal photoreceptors

to the complex and crossed system that ends in the visual cortex in the occipital lobe. Determining the site of lesion in visual field defect is quite elementary. In retrochiasmatal lesions, a homonymous defect is likely to be found. The type of homonymous defect (hemianopia, quadrantanopia, or scotoma) depends on the exact location and extension of the injury. Congruency (symmetrical defect) is known to occur in the more posterior region of the visual pathway (i.e. visual cortex) [5], which is shown in the patient's Humphrey test. The presence of macular sparring is considered as the result of arterial occlusion in one of the dual blood supplies to the visual cortex [5]. Brain imaging also concludes acute infarct lesions in various regions of the left hemisphere, including the occipital lobe. As an ophthalmologist, one should always be aware of HH that 84.4% of HH secondary to stroke was due to infarction in the occipital lobe. Damage to the occipital lobe usually causes no other neurologic manifestations. Some patients may experience hallucinations or photopsia in the blind hemifield [1], therefore imaging should always immediately be done because whenever a stroke is diagnosed, it is an emergency. Prompt treatment should be administered to reduce mortality, optimize functional outcomes, and improve disability and independence after stroke [5]. Antiplatelets were given because the etiology of this HH is ischemic stroke. Kim et al [10]. found that cilostazol combination treatments were found to be associated with even further reductions of recurrent ischemic stroke and did not increase the incidence of hemorrhagic stroke, and suggested that cilostazol-based combination regimen could be a good alternative to aspirin only or aspirin plus clopidogrel in patients with a high risk of ischemic events.

Various studies had shown that spontaneous improvement of HH is seen within the first months of injury [1,2,4]. However, it does not always occur, as it has been postulated to occur based on the concept of neuroplasticity [1]. Multi-disciplinary approach should be engaged in managing patients with HH, including vision training with a prism, low vision rehabilitation, and occupational therapy [1,5]. No single therapy dominates the other but complements each other. Social support, as well as psychological rehabilitation, may also be beneficial in improving and adjusting the quality of life [1].

In our case, the patient was treated by both neurologist and ophthalmologist for comprehensive management of the stroke and the HH (Figures 1 and 2).

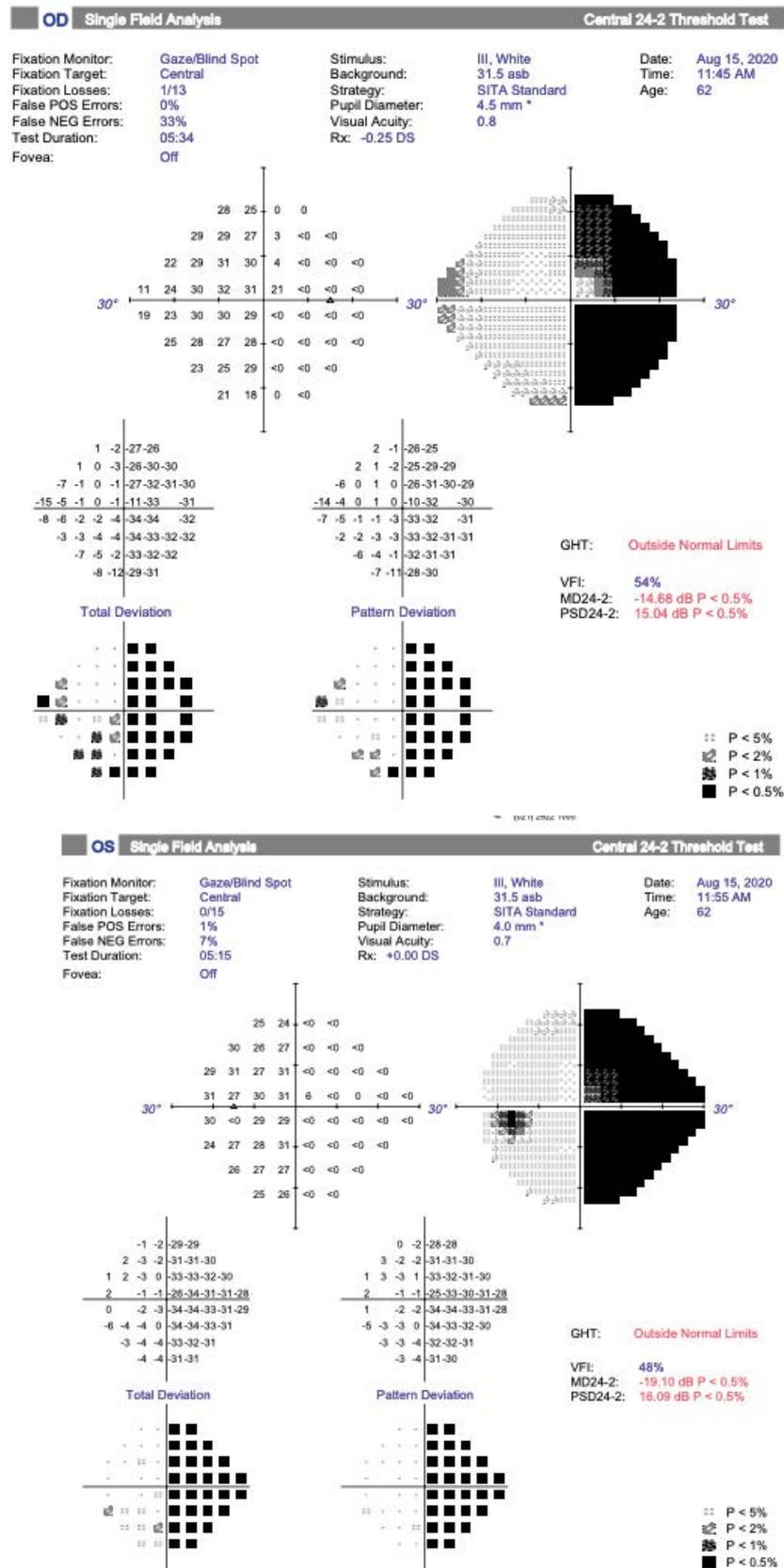


Figure 1: Humphrey's result in both eyes showed right congruent homonymous hemianopia (HH).

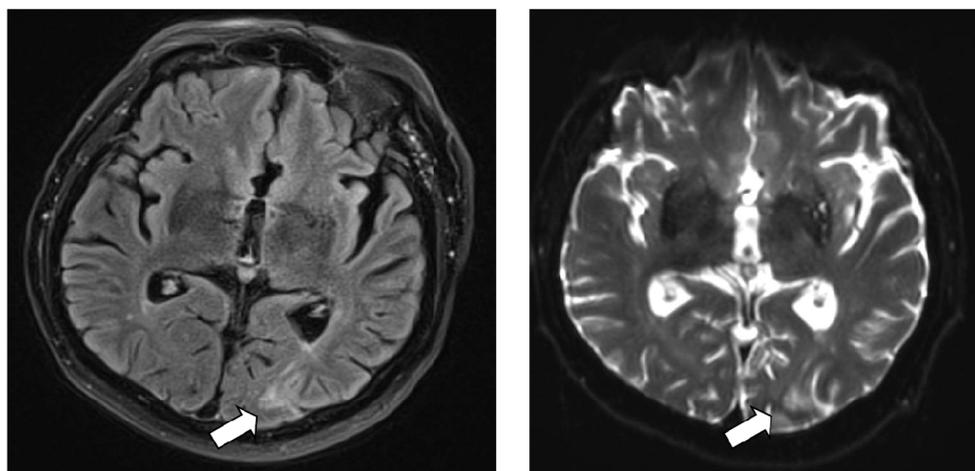


Figure 2. White arrow showed infarct lesion in the left occipital lobe during MRI.

CONCLUSION

Ophthalmologists should always be aware that sudden onset of HH could be the only sign of acute brain infarction, as around 84% of them were caused by vascular events. Therefore, prompt diagnosis and treatment should be done to reduce mortality, optimize functional outcomes, and improve patients' quality of life after stroke.

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