Clinical Case Report

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An atypical presentation of functional visual loss

A case report

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Abstract

Rationale: Functional visual loss (FVL) can manifest as various symptoms. Decreased distant visual acuity is the most common symptom and visual field defect is the second most common symptom. Hemianopsia is rarely reported. In an atypical situation of FVL, it is important to prove that no organic pathology exists, through detailed history taking and appropriate examinations.

Patient concerns: This review presents the case of a 48-year-old male patient presented with decreased bilateral visual acuity and visual field defect after a traffic accident 3 weeks ago. Visual field test showed atypical features of FVL in which visual field change from binasal hemianopsia to left homonymous hemianopsia.

Diagnosis: The best corrected visual acuities (BCVA) were 20/63 in both eyes and binasal hemianopsia was observed on a Humphrey visual field test. Brain computed tomography (CT) scan and magnetic resonance imaging (MRI) showed no abnormalities in the brain and optic chiasm. Two weeks after presentation, however, the patient's visual field defect changed from binasal hemianopsia to left homonymous hemianopsia. We diagnosed it as FVL due to conversion disorder.

Intervention and outcomes: We decided to cooperate with a psychiatrist for cognitive behavioral therapy and the patient is under observation.

Lessons: Binasal hemianopsia and homonymous hemianopsia are rare; however, it may occur simultaneously in 1 patient with FVL. The possibility of FVL should be considered when there is atypical visual field defect and no organic abnormalities are observed. Repeated Humphrey field test and VEP may be helpful in diagnosis of FVL.

Abbreviations: BCVA = best corrected visual acuity, CT = computed tomography, FVL = functional visual loss, MRI = magnetic resonance imaging, VEP = visual evoked potential.

Keywords: binasal hemianopsia, functional visual loss, homonymous hemianopsia

1. Introduction

Functional visual loss (FVL) is a nonorganic visual loss without a pathologic cause. Unlike malingering, it is an unconscious, often subconscious, simulation of a nonexistent disease. Incidences of FVL have been reported to be approximately 1.75% in children and 5.25% in adults.[1,2] In general, a physician is usually confused when a patient's symptoms are not consistent with the test results or when he meets a patient who intends to cheat for some purpose. This may lead to the breakdown of the doctor–patient relationship and further objective evaluation of the patient becomes impossible. Therefore, the physician must understand the history of the patient's symptoms and confirm the absence of pathological lesions through accurate physical examination. It is also necessary to have the awareness about ancillary methods of screening to show that the visual symptoms of the patient are nonorganic.

FVL is manifested as visual acuity loss and visual field loss. It is common to have both the symptoms at the same time rather than a single symptom at a time.[3] The most common field defect caused by FVL is concentric loss of peripheral vision, whereas hemianopsia is very rare.[4] Distinguishing organic visual loss and FVL has important clinical implications. FVL occurs most commonly in situations of conflict, inadequate support, excessive demands, or among those with suggestible or neurotic personality disorders[5]. If the conflict is not resolved, the symptoms may become permanent. Therefore, early diagnosis of FVL is important for immediate treatment, for minimizing patient distress, and to avoid providing unnecessary medical care. FVL can be confirmed by proving normal visual function. Therefore, all other pathologies must be ruled out. Evaluation must include complete ophthalmologic testing, neuroimaging, and psychiatric evaluation.

We present a rare case of FVL with binasal hemianopsia after a concussion, and visual field change from binasal hemianopsia to left homonymous hemianopsia.

Written informed consent was obtained from the patient for this case report. No ethical approval was obtained because this study is a retrospective case report and did not involve a prospective evaluation.

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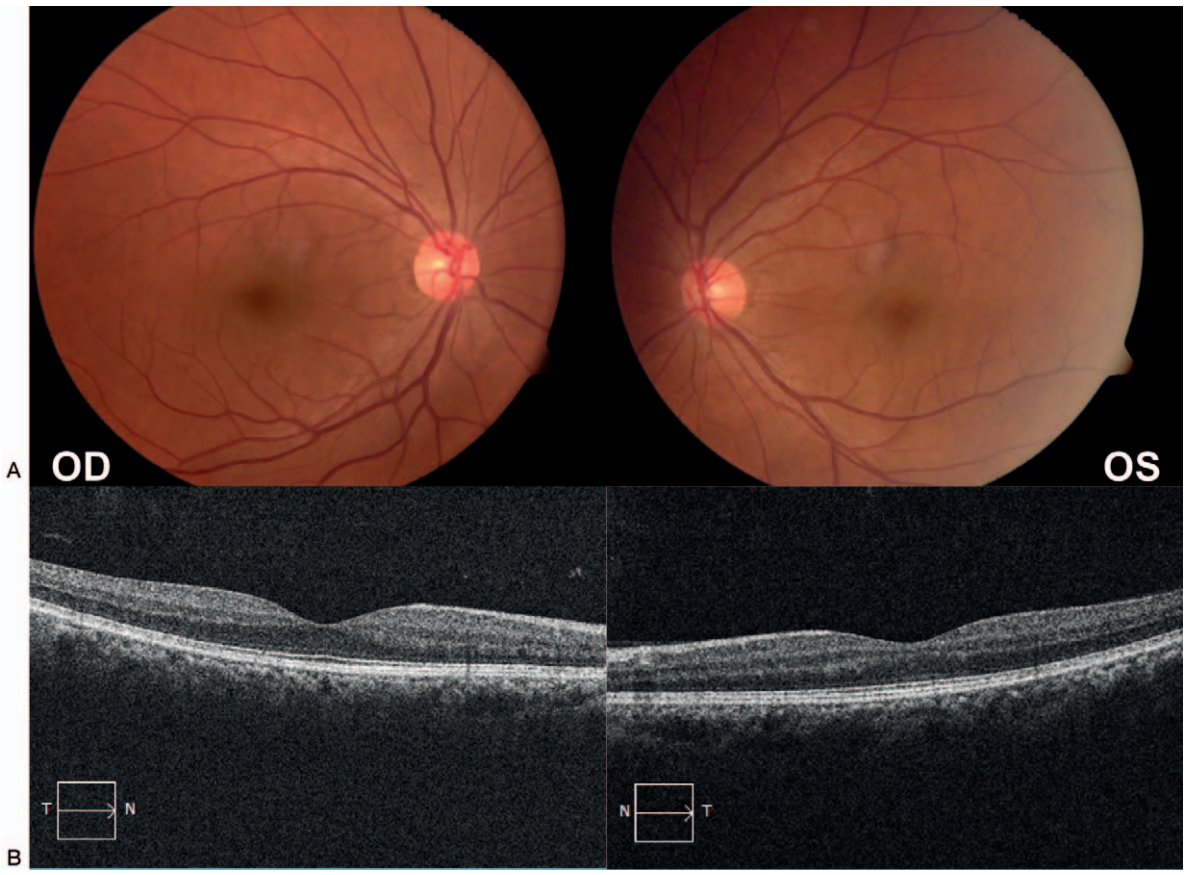


Figure 1. (A) Fundus photography showed normal optic disc and fundus in both eyes. (B) Optical coherence tomography of the macula showed a normal macula in both eyes.

2. Case report

A 48-year-old male patient presented with blurred vision after a traffic accident 3 weeks before presentation. The patient had temporary employment and was carrying goods on a motorcycle at the time of the injury. The patient stated that he was surprised by the injury and fainted when he saw his broken finger. In examinations performed in the emergency room immediately after the injury, the patient was diagnosed with a concussion and finger fracture, and no abnormality was found on a brain computed tomography (CT) scan. The patient had no underlying diseases such as diabetes or hypertension. In addition to blurred vision, he was being treated with tinnitus and headache.

On ocular examination, best corrected visual acuities (BCVAs) were 20/63 in both eyes. On the slit lamp examination, external eye was unremarkable. The cornea and lens was clear. Dilated fundus examination and spectral domain optical coherence tomography revealed normal posterior pole and optic disc (Figs. 1 and 2). His intraocular pressure was normal. On a Humphrey visual field test, binasal hemianopsia was observed (Fig. 3). No pupillary disturbances were observed in the pupillary test conducted to rule out optic neuropathy. There was no abnormality in latency and amplitude in both eyes in the visual evoked potential (VEP) test (Fig. 4). Brain magnetic resonance imaging (MRI) was performed to rule out the presence of brain lesions such as bilateral internal carotid artery aneurysms and hydrocephalus, which may cause binasal hemianopsia. Brain MRI showed no abnormalities in the brain and optic chiasm.

Two weeks after presentation, BCVAs of both eyes were still 20/63. However, the patient's visual field defect was left homonymous hemianopsia, which was different from the result of the previous test (binasal hemianopsia) (Fig. 5). Additional brain MRI was performed, but no abnormalities were found (Fig. 6). Because 2 consecutive visual field test results were inconsistent with each other and no organic lesion was found to explain the decreased vision and visual acuity, and visual field findings were not consistent with VEP, we diagnosed it as FVL and decided to cooperate with a psychiatrist.

The psychiatrist diagnosed the patient with conversion disorder due to primary gain caused by a traumatic visual impression at the time of injury and planned cognitive behavior therapy.

At 3 and 6 months after presentation, BCVAs of both eyes were still 20/63 and visual field test showed left homonymous hemianopsia. Since then, the patient has not visited the hospital for personal reasons.

3. Discussion

Concentric loss of peripheral vision, a cloverleaf pattern with automated visual fields, spiraling, or cross-over isopters on Goldmann visual field is indicative of FVL.[6,7] Binasal hemianopsia is a rare visual field defect in patients with FVL. Binasal hemianopsia can occur because of bilateral internal carotid artery aneurysms, hydrocephalus, intracranial mass lesions, elevated intracranial pressure, and congenital etiology.[8–10] To the best of

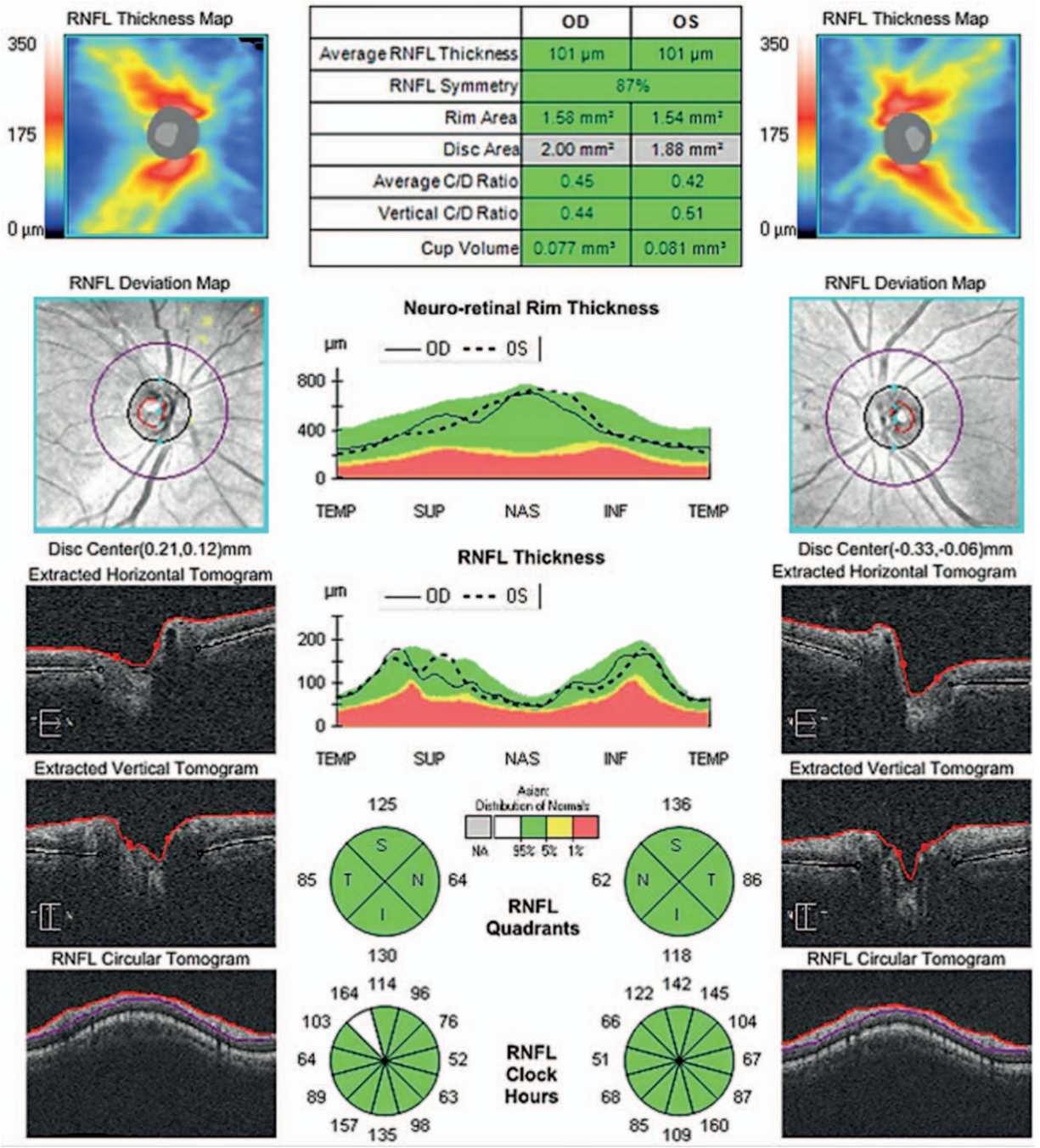


Figure 2. Optical coherence tomography of the optic nerve head and retinal nerve fiber layer (RNFL) analysis showed normal optic disc and RNFL thickness.

our knowledge, binasal hemianopsia has not been reported in patients with FVL. In this case, binasal hemianopsia turned into left homonymous hemianopsia in 2 weeks, which is unusual and has also not been reported. If binasal hemianopsia were maintained without change, it would not be possible to rule out the possibility of a binasal hemianopsia caused by an unknown organic lesion. However, in this case, the visual field changed from binasal hemianopsia to left homonymous hemianopsia. Therefore, functional binasal hemianopsia is more likely than organic visual loss.

The patient showed left homonymous hemianopsia except for the first 2 weeks. The most common causes of homonymous hemianopsia in adults include stroke, followed by trauma and brain tumors.[11] Hemianopsia is relatively uncommon in FVL.[3] In cases of homonymous hemianopsia with no brain lesion, migraine, seizure disorder, transient ischemic attack, and non-ketotic hyperglycinemia should be considered as differential diagnoses.[12–15] In this case, the patient complained of headache but did not have migraine aura symptoms and complained of persistent and diffuse headache. In addition, patient had no history of seizure disorder and diabetes. Thus, the visual field defect was unlikely to be caused by the diseases listed above. The reason for the change in the patient's visual field pattern cannot be clearly defined. It is not clear where the scene of injury was in

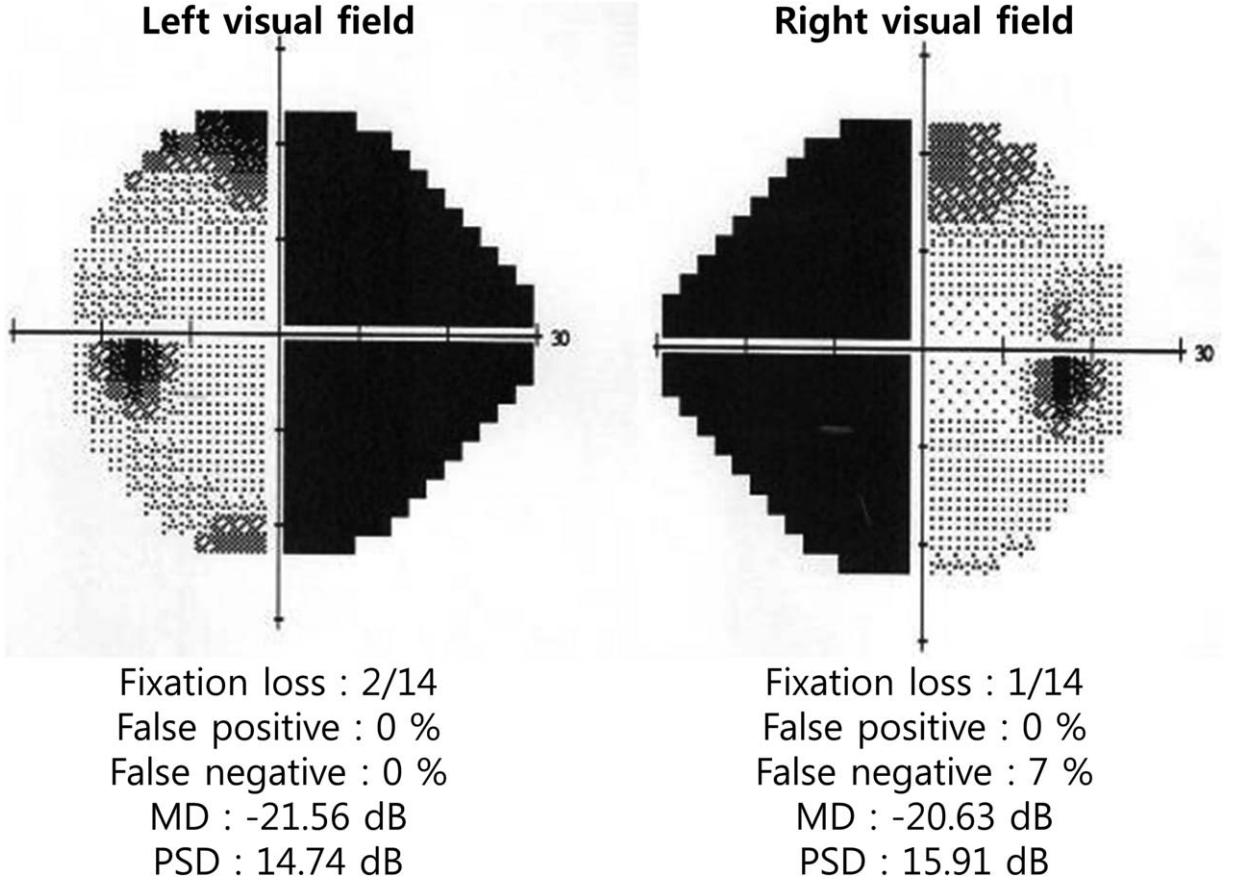
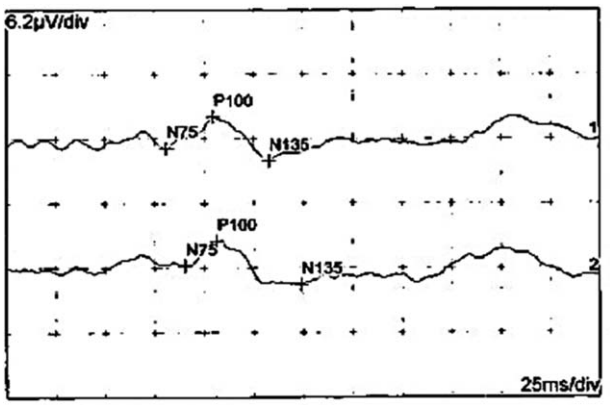


Figure 3. Visual field by 24–2 Humphrey automated perimetry at presentation. Humphrey visual field test showed binasal hemianopsia with respect to the vertical meridian.

the patient's field of vision. However, considering the fact that there was a strong visual impact from the fracture of his finger at the time of injury, it is possible that the patient subconsciously ignored the field of view to avoid the scene at the time of the injury. Therefore, it can be assumed that the functional visual field defect experienced by the patient may have a psychological origin.



	N75 (ms)	P100 (ms)	N135 (ms)	N75-P100	P100-N135
1. Right eye	81	104	132	2.96 μV	4.25 μV
2. Left eye	90	105	149	2.4 μV	4.22 μV

Figure 4. Pattern visual evoked potential (VEP) recorded showing normal pattern of VEP and amplitude attenuation.

VEP may be helpful in the differential diagnosis of FVL. Unlike the Humphrey vision test, which measures subjective responses, VEP has the advantage of being able to evaluate the visual field more objectively without being greatly dependent on patient coordination or the proficiency of the examiner.

In general, the prognosis for FVL is reported to be good. Several authors emphasized the role of simple reassurance in the treatment of many patients with functional visual disturbances, and nonspecific treatments are discouraged.[3,16] Kathol et al[16] reported that reassurance was more likely to recover visual function than nonspecific treatments such as glasses or eye drops. Lim et al[3] reported that resolution occurred in over half of the patients. In the absence of an organic disorder, patients were reported to experience an improvement of 45% to 78% in the vision and visual symptoms with simple reassurance, during 6 to 8 weeks of follow-up, without any special psychiatric treatment or placebo treatment.[16–19] However, in this case, the patient's defect became chronic over more than 6 months. The patient is a nonregular employee and is of a lower socioeconomic status. Therefore, serious self-examination cannot be performed in situations of stress, and the stressor cannot be identified. This inadequate defense mechanism seemed to cause the visual field defect to persist.

In general, it is unhelpful to directly confront patients who are malingering. Instead, it is better to educate the patient that the

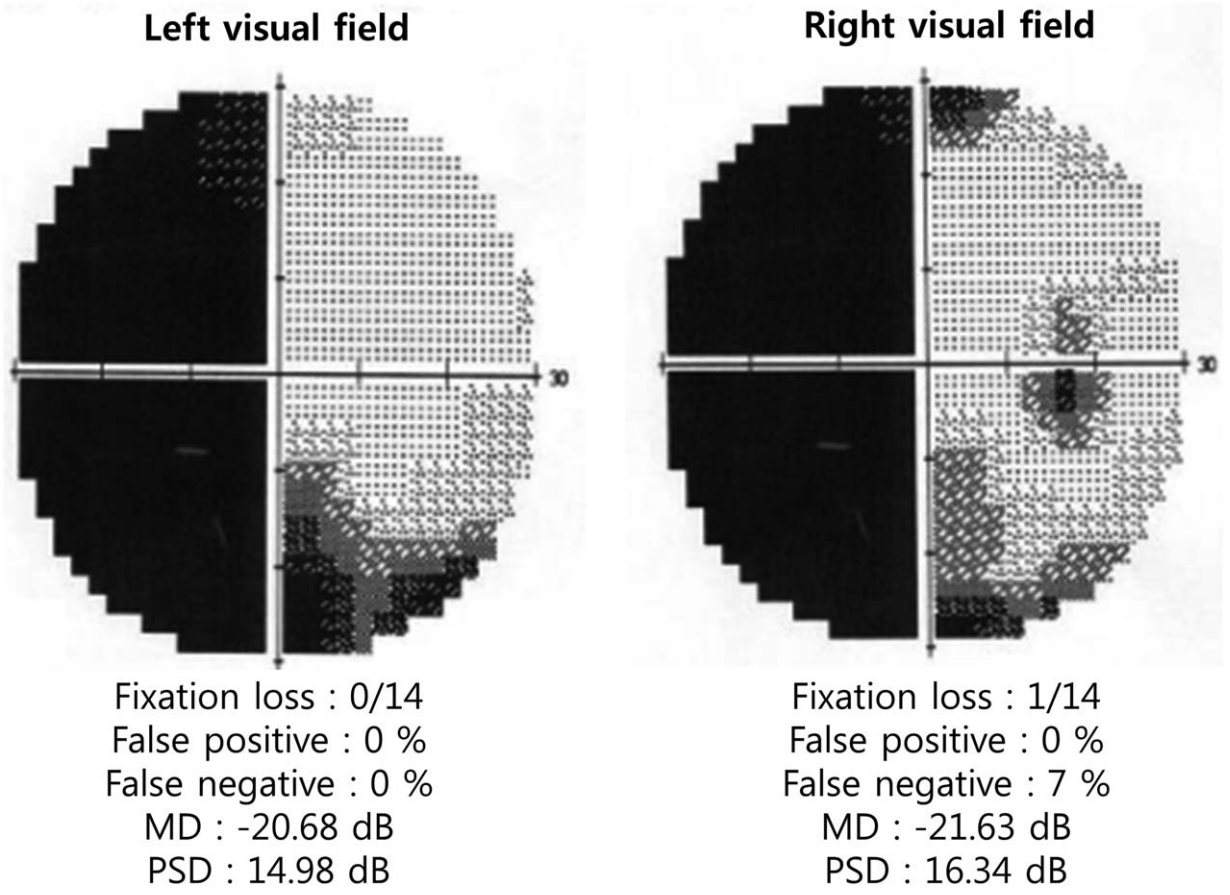


Figure 5. Visual field by 30–2 Humphrey automated perimetry at 2 weeks after presentation. The visual field test demonstrates a left-sided homonymous hemianopia.

cause of visual disturbance is not physiologic and that this can improve over time. In general, it is better to avoid too much testing during FVL diagnosis to avoid fixation of the problem. In this case, no other tests such as neurologic test or imaging were performed from the time of the diagnosis of FVL and only the visual field and visual acuity test were performed every 3 months.

In summary, the reasons for diagnosing FVL in this patient include the following. First, at the time of the injury, the visual

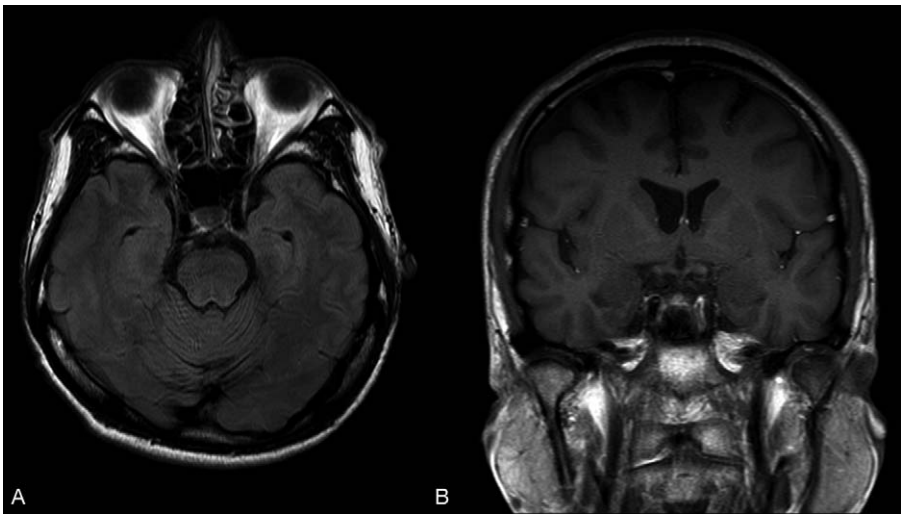


Figure 6. Brain magnetic resonance imaging with contrast did not show any abnormalities around the optic chiasm [(A) a fluid-attenuated inversion-recovery (FLAIR) image, transverse section, (B) a FLAIR image, sagittal section].

impact was so strong that the patient was stunned. Second, pattern of visual field test changed from binasal hemianopsia to left homonymous hemianopsia within a short period. Third, no abnormalities were observed in fundus examination, VEP, and brain MRI. We could not find any other underlying cause for the ophthalmologic symptoms. Fourth, the patient continued to complain of various symptoms such as tinnitus and headache. These suggest that there is a high possibility of functional abnormality for gains such as personal attention, sympathy, or release from unpleasant responsibility.

4. Conclusion

Although binasal hemianopsia and homonymous hemianopsia are rare, it may occur simultaneously in a FVL patient as a presentation symptom. If atypical visual field defects following physical trauma are present and no organic abnormalities are observed, the possibility of FVL should be considered because it may be a visual symptom due to FVL. In such cases, the repeated Humphrey field test and VEP may be helpful in differential diagnosis.

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