

RIGHT HEMIANOPSIA DUE TO A FOCAL SUBARACHNOID HEMORRHAGE ALONG LEFT OPTIC TRACT IN THE ISCHEMIC STROKE PATIENT : A CASE REPORT

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BACKGROUND

Hemianopia is a visual field defect that occurs when there is damage to the visual pathway, resulting in loss of vision in one-half of the visual field. Optic-tract (OT) damage has many causes. The information from each eye is split at the chiasm, with the medial fibers crossing to the opposite side and the lateral fibers passing to the ipsilateral optic tract. The lesion after the chiasm produces homonymous field defects.

In Korea, there are few cases of single lesions of the visual tract that have been reported. Cases of optic chiasm and visual tract hemorrhage have been reported in patients with pituitary apoplexy. This case study demonstrates the presence of hemianopia in a specific subarachnoid hemorrhage (SAH) patient and effectiveness of a hospitalized rehabilitation program with a SAH patient in an optic tract.

CASE DESCRIPTION

An 83-year-old woman with cerebral infarction in the left corona-radiata was admitted to our hospital for rehabilitation due to right hemiplegia. (Fig. 1) The patient underwent vitrectomy in the left eyeball. According to the brain computed tomography (CT) imaging results, defects in the visual pathway were strongly expected. (Fig. 2)

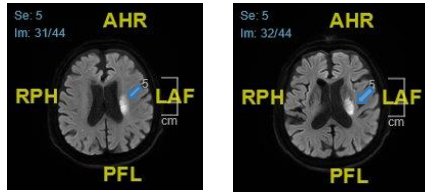


Fig1. Brain MRI diffusion: Cerebral infarction on left corona-radiata.

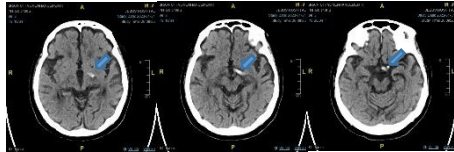


Fig2. Brain CT(NE): Subarachnoid hemorrhage along the left visual tract.

She was uneducated and evaluated as MMSE 9+4 CDR 3. She was depressed, and her motives were not evident. She refused to proceed with examinations such as the Beck Depression Inventory (BDI) test and Beck Anxiety Inventory (BAI) test. As a medical history of the patient, she underwent a vitrectomy due to retinal detachment in the left eyeball. So only the function of the right eye could be evaluated. The first visual field test was failed, and the second visual field test showed that there was visual impairment, specifically right hemianopsia (Fig. 3a). We conducted a Visual Evoked Potential (VEP) test (Fig. 4), and there was no evidence of visual pathway dysfunction in the right eye.

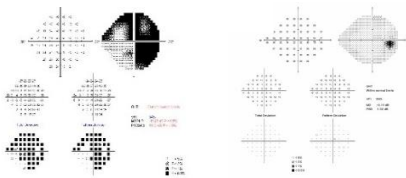


Fig3a. Visual field test : Right hemianopsia. Fig3b. Visual field test : normal.

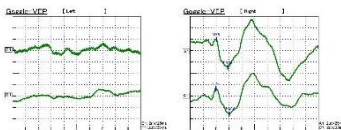


Fig4. VEP showed no evidence of visual pathway dysfunction, Rt.

The study conducted a comprehensive rehabilitation program that included mood control, cognition rehabilitation, and compensatory visual strategies. After two months, there were many changes. (Fig. 5)

	2023.01.31	2023.04.12
MMSE/CDR	9+4/3	13+4/3
BDI	Not testable	3 (Normal)
BAI	Not testable	0(Normal)

Fig 5. Progress in Cognition and mood

Compensatory visual strategies included training the patient to scan their environment and use their intact visual field to compensate for the loss of vision in the affected field. We checked visual deficit, including visual-motor reaction time and peripheral visual awareness, using Dyna-Vision on February 28 (Fig. 6). After one month, we checked again on April 4 (Fig. 7).

Total Average Reaction Time		Score		Total Average Reaction Time		Score	
2.79	4.94	13	9	1.50	1.65	56	40
2.49	2.59	16	22	1.50	1.63	44	51

Fig 6. Dyna-vision result on 2.28

Fig 7. Dyna-vision result on 4.4

DISCUSSION

Damage to the visual pathway can be caused by various factors such as tumors, vascular malformations, aneurysms, trauma, and inflammatory diseases. Although there is currently no agreement on visual field rehabilitation therapy and treatment, various approaches have been developed that all share a common therapeutic principle: repeated practice of specific visual tasks. Due to the patient's refusal to take the first BDI and BAI tests, it was challenging to accurately assess changes in mood. Nevertheless, by observing the patient's progress during treatment, it was evident that the patient is motivated and has increased participation in the rehabilitation program

CONCLUSIONS

Setting goals for comprehensive rehabilitation therapy is important and should consider the patient's general condition. In this case, the patient is blind in the left eye and has to rely on the remaining right eye for daily activities. The patient's brain CT revealed optic nerve damage and hemianopsia was suspected, which helped to guide the rehabilitation treatment and understand the patient's condition. Furthermore, it was found to be effective in developing the visual field in patients with optic tract lesions causing homonymous field defects.

Reference

1. <https://journal.opted.org/article/torpedo-maculopathy-a-teaching-case-report>
 2. Optic Tract Injury Caused by Subarachnoid Hemorrhage in Perimesencephalic Cistern