CASE REPORTS

Palinopsia Accompanied with Migraine Attack After Having Occipital Brain Abscess

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ABSTRACT

Palinopsia is defined as persistence of recurrent visual images after the stimulus has been removed. A 55-year-old male patient with long-standing migraine history developed brain abscess in the right occipital lobe. The patient developed episodes of palinopsia accompanied with migraine attack after healing of occipital lesion. The phenomenon cannot be sufficiently explained with single risk factor, although occipital lesion and migraine are both known to cause palinopsia. We speculated that migrainous brain is not always symptomatic but may drive cortex sensitive for second insult, such as occipital brain lesion. The predisposition may contribute to appearance of palinopsia.

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Introduction

Palinopsia is defined as the persistence of recurrent visual images after the stimulus has been removed.¹ This phenomenon arose with various proposed causes as follows: post-geniculate cortical lesions, peripheral lesions of visual pathways, epilepsy, migraine, drugs, trauma, and diffuse cortical pathologies.^{2–6} We report a rare palinopsia case accompanied with migraine attack after having occipital abscess.

Case report

A 55-year-old male visited our department with complaints of headache, vertigo, and fever. His past history included sinusitis and long-standing migraine, although family history was unremarkable. He had been prescribed zolmitriptan for his migraine attacks. Apart from mild fever of 37.7 °C, initial examination of his physical and neurological profile, including visual field, showed no abnormality. Blood examination showed leukocytosis, white blood cell count of 11,000 /μL and neutrophil count of 8140/μL without elevation of C-reactive protein. Brain T1-weighted contrast-enhanced magnetic resonance imaging (MRI) revealed a

ring-enhanced space-occupying lesion located in the right occipital lobe, diffusion-weighted imaging showed high intensity in this lesion (Figure 1(a)). Based on these findings, he was diagnosed with brain abscess, and administration of multiple antibiotics was begun on the day of admission (day 1). The cause of abscess was unknown, although the previous sinusitis might associate with the occurrence. On day 3, he complained of progressively worsening headache and MRI showed growth of the brain abscess (Figure 1(b)). He was performed abscess drainage on day 4. The left homonymous hemianopia appeared on day 11, with appearance of a new cystic lesion contiguous with the drained lesion (Figure 1(c)). Continuous antibiotic therapy was effective as shown by reduced size of the drained lesion, and was stopped at day 59 under our judgment of remission of the brain abscess. The new cystic lesion also diminished spontaneously without cyst fenestration (Figure 1(d)) and subsequently the left homonymous hemianopia was healed. He remained well until day 117, when throbbing headache appeared. Scintillating scotoma also appeared on day 120. He took 2.5 mg of zolmitriptan based on his understanding that the episode was migrainous, and his headache was relieved. On the

Figure 1. (A) On day 1 shows the brain abscess in the right occipital lobe on T1-weighted contrast-enhanced (T1 CE) and diffusion-weighted imaging (DWI). (B) On day 3 shows the enlargement of the abscess. (C) On day 11 shows a new cystic lesion arose contiguously with the abscess after drainage surgery on DWI and T2-weighted imaging. (D) On day 59 shows the shrunk cyst without surgical intervention.

next day, he experienced various afterimages of the object he had seen very recently in his visual field despite the absence of headache. These afterimages appeared for a couple of minutes in each episode, and recurred intermittently for about 24 h. These episodes were considered to be his first episodes of palinopsia (Table 1(a)) and characterized by vivid colors and clear contours. On day 193, he had a migraine attack with preceding scintillating scotoma after looking at a ceiling light at a supermarket. On the next day, he experienced blurred afterimages in his left visual field without resolution of headache (Table 1(b)). These afterimages

appeared for a brief second in each episode, and recurred intermittently for about 24 h. They were considered to be the second episodes of palinopsia. Serial MRI demonstrated no changes when he complained of these symptoms. There were not any issues about ophthalmologic findings such as extra-ocular movements and the condition of the optic disc. Electroencephalography showed no epileptic spikes. The two episodes disappeared spontaneously and similar symptoms have not appeared since then.

Discussion

We presented a patient with long-standing migrainous history showed repeated episodes of palinopsia accompanied with a migraine attack after having the right occipital brain abscess. He had not experienced such episodes at the timing of migraine attacks until he got the occipital brain abscess. Those episodes were driven by the development of occipital lesion, although migraine can independently cause palinopsia.^{2,3} Post-geniculate lesion including occipital abscess can cause palinopsia by itself. However, palinopsia in the case always occurred accompanied with severe migraine attacks, and the clinical signs of epilepsy were not also detected. Additionally, the

Table 1. Episodes of palinopsia in our case.

A. The first episodes of palinopsia

Duplicated afterimages of "T" characters moving in an ordered row before him.
Face of his cat, running to the patient, but looking sideways unnaturally.
Three-dimensional afterimage of his cat floating above the sandbox.
Replicated images of his cat persisting in the visual field.
Car in motion left images in its wake like a strobe movie.
He saw a man wearing a knit cap and saw the same cap on every subsequent person viewed.

B. The second episodes of palinopsia

Left half of people's faces seemed to blur.
Left eyes of people around him were seen swelling abnormally.
Blurred afterimage of a flower remained in the field of view.

episodes did not occur during the acute state of the brain abscess. Therefore, the occipital lesion itself was not necessarily the unique etiology of palinopsia.

Migrainous brain seemed to be necessary for the occurrence of palinopsia. Migraine is known to reduce the cortical thresholds for diverse stimuli.⁷ Gersztenkorn et al. explained that palinopsia from post-geniculate cortical lesion is caused by focal cortical hyperactivity, which may be from cortical deafferentation, epileptic discharges or cortical irritation.³ We hypothesized that the right occipital abscess in the case promoted neocortical hypersensitivity caused by long-standing migraine. Under such condition, palinopsia may be easily induced by migraine attack. Indeed, the case also experienced migraine attacks not accompanied with episodes of palinopsia even after having the occipital abscess. We speculated palinopsia occurred only when the neocortical excitability exceeded a certain limit by severe migraine attack.

Declaration of interest

The authors declare that there are no conflicts of interest. The authors alone are responsible for the writing and content of the article.

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