Case Report

Anti-calcitonin Gene-Related Peptide Monoclonal Antibody Is Effective for Preventing Migraine Aura without Headache

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Anti-Calcitonin Gene-Related Peptide Monoclonal Antibody Is Effective for Preventing Migraine Aura without Headache

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Abstract: Background: anti-calcitonin gene-related peptide monoclonal antibodies (CGRP mAbs) are clinically effective in preventing migraine attacks, photophobia, and migraine aura associated with headaches. However, no study has yet investigated the effectiveness of CGRP mAbs in preventing migraine aura without headache. **Case report:** A female patient of 49 years old has a long history (since age 10) of photosensitivity and typical migraine aura without headache. The symptoms slightly responded to oral medication but did not completely resolve. Just one day after the administration of galcanezumab, her photo-hypersensitivity and migraine aura had completely resolved. Consequently, the administration of the oral migraine preventive medication was discontinued. Monthly galcanezumab at the dose of 120 mg has been continuously given and she did not experience any aura or headache so far. **Conclusions:** CGRP mAbs is considered an effective treatment method in preventing migraine aura without headache. Although CGRP mAbs do not penetrate the blood-brain barrier, trigeminal nerve stabilization with CGRP mAb can prevent cortical spreading depression.

Keywords: aura; migraine; cortical spreading depression; calcitonin gene-related peptide

1. Introduction

Migraine aura without headache is classified as the subtype of migraine with aura in the *International Classification of Headache Disorders*, 3rd edition (1). Despite its rarity, the prevalence of aura without headache has been reported as 7 (0.175%) in 4,000 general populations in Denmark(2). A study in a US ophthalmology clinic has reported that 65 out of 1,000 patients (6.5%) have experienced migraine without headache(3), whereas in Japanese ophthalmology clinics, 35 out of 1,063 individuals (3.2%) were diagnosed(4). Migraine aura without headache tends to occur later in life and is more common in elderly patients(5).

Cortical spreading depression (CSD) has been demonstrated as the pathology of migraine aura(6). Some basic studies have revealed that anti-calcitonin gene-related peptide monoclonal antibody (CGRP mAb) and CGRP receptor antagonist (gepant) are effective in the inhibition of CSD(6).

CGRP mAb and gepants are clinically effective in preventing migraine attacks, photophobia, and migraine aura associated with headaches. In one study, 44% (69/158) of migraine patients showed ≥50% response rate after six months treatment with CGRP mAbs. And significant decreases in photophobia (-19.5%, $p < 0.001$) and aura ratios (-25.1%, $p = 0.008$) were found in ≥50% response rate group(7).

However, no study has yet investigated the effectiveness of CGRP mAb in the prevention of migraine aura without headache

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2. Case Report

This study included female patient with a long history (since age 10) of photosensitivity and migraine aura without headache. While she has experienced typical scintillating scotomas several times per year, which resolved within 2 hours, mild nausea and increased photosensitivity after these migraine auras have also been reported. Based on her medical history, she has been receiving anti-anxiety medication for a known panic disorder.

At her first medical visit at age 49, neurological examination showed no abnormality and the brain computed tomography (Figure 1) and routine blood tests were normal. No previous history of neurological or cardiovascular diseases has been recorded, and due to claustrophobia, an Magnetic Resonance Imaging test could not be performed. At that time, lomerizine chloride, an oral migraine preventive medication, was started at a standard dose. The symptoms showed a slight response to this therapy but did not completely resolve.

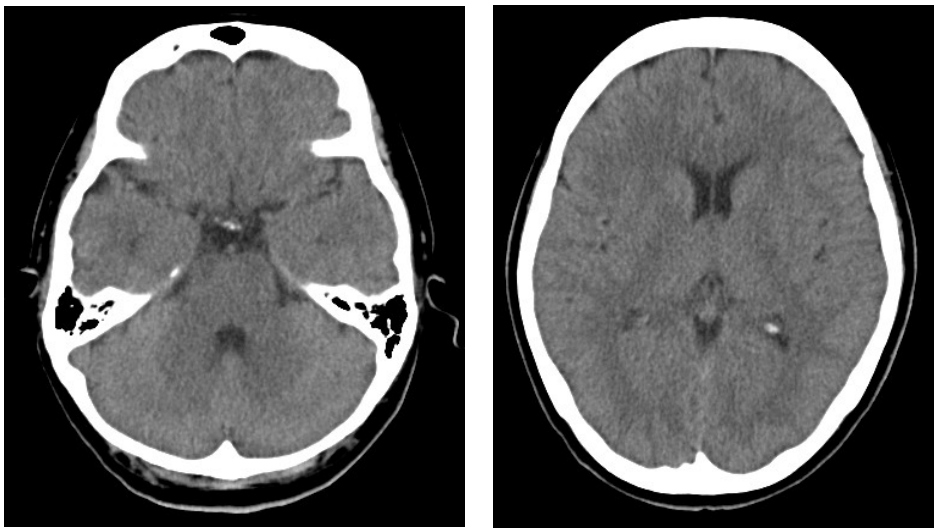

Figure 1. Brain CT.

After a detailed discussion explaining the indications of CGRP mAb therapy, the patient's approval was obtained, and 240 mg of galcanezumab was subcutaneously injected. Just one day after the administration of galcanezumab, her photo-hypersensitivity and migraine aura had completely resolved. No adverse event of galcanezumab was observed. Consequently, the administration of the oral migraine preventive medication was discontinued. Monthly galcanezumab at the dose of 120 mg has been continuously given and she did not experience any aura or headache so far.

3. Discussion

This is the first case report to investigate the effectiveness of CGRP mAb for migraine aura without headache. Typically, oral migraine preventive medications are effective for migraine aura without headache,[1,4] but some patients tend to exhibit resistance to these therapies. In such cases, the use of CGRP mAb is considered an alternative treatment option, with reasonable evidence supporting its efficacy not only in reducing migraine attacks but also in alleviating associated migraine aura and photohypersensitivities(7).

Migraine aura without headache has been reported in relatively older patients, as CGRP concentration decreases with age(5). For these patients, migraine headaches may diminish with aging, but aura can still persist.

A basic study has reported the inhibitory effects of CGRP mAb and gepant on CSD(6). CGRP mAbs do not penetrate the blood–brain barrier. Thus, we concluded that trigeminal nerve stabilization with CGRP mAb is sufficient to prevent CSD.

Currently, CGRP mAb is indicated only for migraine with and without aura. Given our findings and the promising effects of this medication for this migraine subtype, a large clinical trial is required

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to better assess the effects and potential adverse events of CGRP mAb in patients with migraine aura without headache. And optimal dose and frequency of CGRP mAb injections should be investigated in near future.

4. Conclusions

The use of CGRP mAbs is considered an effective treatment method in preventing migraine aura without headache. Although CGRP mAbs do not penetrate the blood–brain barrier, trigeminal nerve stabilization with CGRP mAb can prevent CSD.

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Informed Consent Statement: Informed consent was obtained from the subject involved in the study.

Data Availability Statement: The original contributions presented in the study are included in the article, and further inquiries can be directed to the corresponding author.

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Conflicts of Interest: The authors declare no conflicts of interest.

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