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CASE REPORT

Bilateral occipital infarcts due to persistent migraine with aura in an elderly

İleri yaşta uzamış auralı migrene bağlı bilateral oksipital enfarkt

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Summary

Migrainous infarction is a rare complication of migraine that mostly occurs in the posterior circulation and in younger women, with an incidence of less than 1%. It is known that migraine, especially migraine with aura, is a risk factor for ischemic stroke in younger adults but not in the elderly. We report a 71-year-old male patient who experienced abnormal visions due to migraine headache and persistent aura, causing bilateral occipital infarcts. He has been suffering from migraine with aura since his adolescence. The frequency and severity of his attacks decreased with age. He has recently been diagnosed with hypertension as a vascular risk factor, in addition to migraine and advanced age. His symptoms have been brought under control with verapamil. Migrainous infarction can present itself at older ages without prominent vascular risk factors, and it can be managed with verapamil.

Keywords: Case report; elderly; migrainous infarction; verapamil.

Özet

Migrenöz enfarkt, daha çok genç kadınlarda ve posterior dolaşımda %1'den daha az sıklıkta görülen bir migren komplikasyonudur. Migrenin, özellikle auralı migrenin, yaşlılardan ziyade genç erişkinlerde iskemik inme için bir risk faktörü olduğu bilinmektedir. Migren baş ağrısı ve uzamış auraya bağlı olarak anormal görsel bulguları olan bilateral oksipital enfarkt saptanan 71 yaşında erkek hasta sunulmuştur. Hastanın ergenlik döneminden beri auralı migreni olduğu ve yaşı ilerledikçe atak sıklığı ve şiddetinin azaldığı öğrenilmiştir. Migren ve ileri yaşın yanı sıra vasküler risk faktörü olarak yakın zamanda tanı konulmuş olan hipertansiyon dışında özellik saptanmamıştır. Hastanın semptomları verapamil ile kontrol altına alınmıştır. Migrenöz enfarkt, ileri yaşlarda belirgin risk faktörleri olmaksızın da görülebilir ve verapamil ile kontrol altına alınabilir.

Anahtar sözcükler: Migrenöz enfarkt; olgu sunumu; verapamil; yaşlılık.

Introduction

Migraine is a common and disabling disorder, mostly affecting middle-aged women. The prevalence of migraine in Türkiye is 16.7% in adults between 18 and 70 years of age, and 10.3% for those over 65 years old.[1] Twenty percent of migraineurs experience visual auras. If the auras persist for more than a week without an infarction detected on neuroimaging, it is defined as persistent aura without infarction.[2] Migrainous infarction (MI) is a rare complication of migraine and is defined as one or more aura symptoms corresponding to an ischemic infarct area in the appropriate territory on neuroimaging.[2] The incidence of MI is less than 1%, accounting for 0.2%–0.5% of ischemic strokes.[3–5] It is known that migraine, especially migraine with aura, is a risk factor for ischemic stroke in younger adults but not in the elderly.[3]

In this case report, we present an elderly patient who had persistent migraine with aura causing bilateral occipital infarcts.

Case Report

A 71-year-old male patient applied to our neurology outpatient clinic with complaints of headache and continuous abnormal visions that started 4 days ago, beginning with black dots in his right eye. He had been seeing bright zigzags and visions resembling

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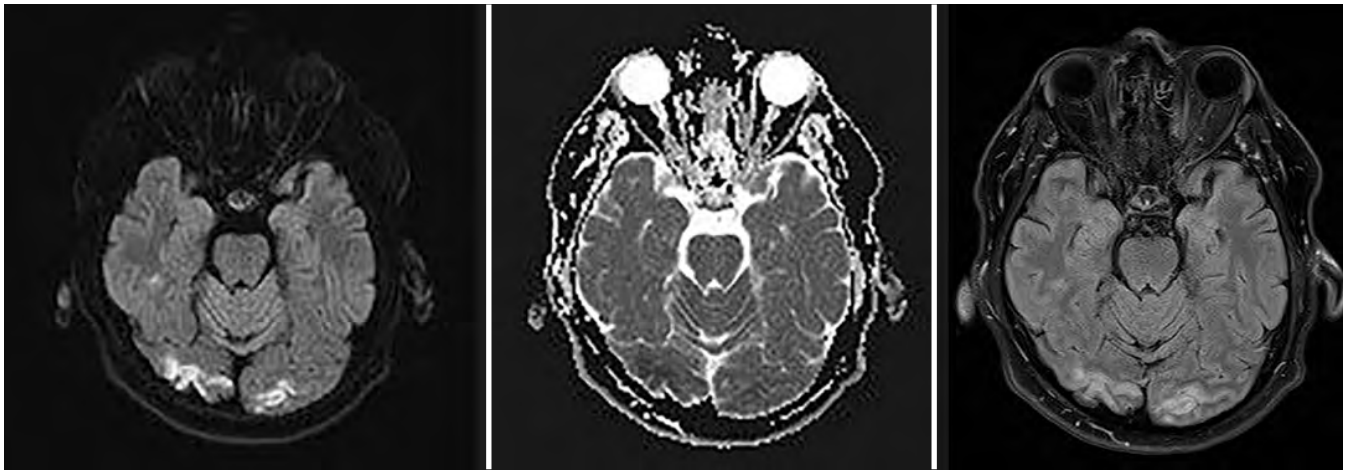

Figure 1. Diffusion-weighted imaging and apparent diffusion coefficient sequences showing the bilateral occipital cortical infarction areas. c. Fluid-attenuated inversion recovery sequence showing a small area of cortical damage in both occipital lobes.

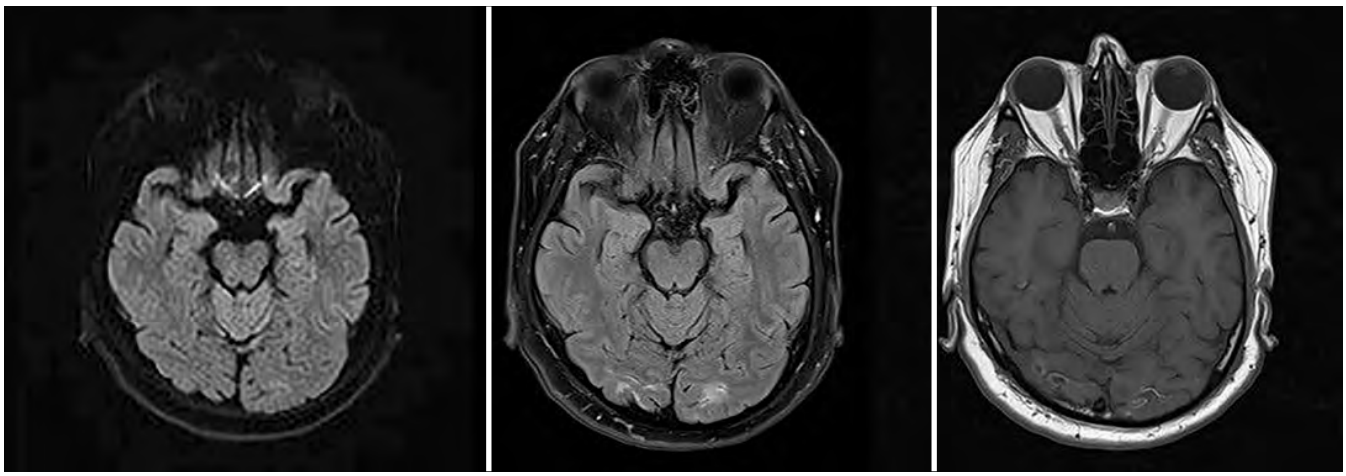

Figure 2. Diffusion-weighted imaging, fluid-attenuated inversion recovery, and axial T1 sequences showing partially resolved bilateral occipital cortical infarction areas with laminar necrosis.

a surreal painting, which revealed abnormal visions in both eyes during the examination. Since then, he had started seeing exploding stars and blue lightning within a short period. He reported his attacks mostly in his right orbital/periorbital area, with characteristics similar to his previous headaches. Verapamil 20 mg/d was started and gradually increased to 80 mg/d. The headache steadily declined over the first 4 days and resolved on day 15. Abnormal visions, such as exploding stars and blue lightning, gradually resolved by the 10th day. He continued seeing geometric patterns, like squares, for a short period until day 25. He had difficulties with reading, as he couldn't see the end of words and had black spots in his visual field. On day 42, he reported only tiny black dots in his visual field.

His neurological examination was normal, and his blood pressure was 150/80 mmHg. He was evaluated by an ophthalmologist on the 10th day of the onset of his symptoms. His ophthalmological examinations, including pressure examination and optical coherence tomography, were normal. Visual field examination revealed bitemporal para-central scotomas.

We performed cranial magnetic resonance imaging (MRI) on the 10th day of the onset of his symptoms and observed bilateral occipital cortical infarctions (Fig. 1). These bilateral cortical infarction areas partially resolved with laminar necrosis by day 42 (Fig. 2). His blood test results were within normal limits. His echocardiography findings were normal, with no arrhythmia reported. Only a focal fibrofatty plaque was observed on the right internal carotid artery, as found in Doppler ultrasonography performed on bilateral carotid and vertebral arteries. His cranial MR angiography was normal.

Based on the International Classification of Headache Disorders, the patient was diagnosed with migrainous infarction.[2]

He has been suffering from migraine with aura since adolescence. The attacks usually started with right-sided lightning flashes and zigzags, followed by a unilateral throbbing headache. The frequency and severity of his headaches decreased with age. He had only 4–5 attacks during the last year. From time to time, he experienced speech difficulties during attacks. He has been using valsartan 80 mg/d for hypertension and acetylsalicylic acid (ASA) 100 mg/d for a month. The patient is a non-smoker with a low frequency of alcohol consumption. As for family history, his paternal grandmother had migraine. No history of stroke is reported.

Discussion

Persistent migraine auras can be seen between the ages of 7 and 74 years and are suggested to cause occipital infarct due to hemodynamic changes. The result of these hemodynamic changes in the posterior cerebral area is visual disturbances.[6] MI is a different event from ischemic stroke, mostly seen in the middle-aged female population, with a low incidence at advanced ages.[2–4,6,7] We know that MI occurs in the middle cerebral artery territory and posterior circulation, mostly affecting the occipital lobes and typically affecting a single vascular territory.[3,4,6] The most common symptom preceding an acute MI is a visual aura that resolves within hours.[4] In this case, the visual symptoms started to resolve 10 days after the medication. We cannot say exactly which visual symptoms were caused by auras or due to occipital infarcts.

The most widely accepted theory for aura symptoms and ischemia causing infarcts is cortical spreading depression, which starts with depolarization in the occipital areas.[6] Hemodynamic changes such as reduced cerebral blood flow, impaired cerebrovascular reactivity, vasoconstriction, altered blood-brain barrier permeability, and vascular endothelium-related hypercoagulopathy cause hypoperfusion and predisposition to ischemic events, even to MI.[8] Cortical laminar necrosis, which was apparent on MRI in our case, can be explained by these hemodynamic changes causing hypoxia in the relevant cortical areas.

Patients with these asymptomatic or transient ischemic events and patients with MI have favorable outcomes with no or minimal residual symptoms and no recurrences.[3,4,6] Older patients with more vascular risk factors besides age, however, are more vulnerable to these kinds of changes, and most probably they experience more severe attacks with sequelae.[4,6] Nevertheless, we don't know the prevalence of MI at advanced ages. Studies investigating these ischemic events, symptomatic or asymptomatic, include patients under the age of 65.

It has been documented that ischemic stroke and infarct-like lesions are seen in patients with migraine.[2,8,9] In an MRI-based study with migraineurs, no occipital infarct was documented, and no major differences were noted for the vascular risk factors between migraine patients and the control group.[3,9] Although Mosek et al.[10] reported no increased risk of ischemic stroke in migraineurs over 60 years of age, Li et al.[7] reported an elevated risk for patients over 65 years of age, particularly migraineurs with no vascular risk factors. Not atherosclerosis but small vessel disease and hemodynamic changes are suggested to be the underlying mechanisms.[9] In our case, the risk factors were recently diagnosed hypertension, advanced age, and long-term migraine with aura. These findings suggest that a different mechanism is probably responsible for the lesions and occipital infarcts.

In terms of differential diagnosis, his symptoms and neuroimaging findings did not indicate a classical posterior cerebral artery infarction. He had positive symptoms such as bright zigzags and visions resembling surreal paintings, besides negative symptoms such as black dots and vision loss in some areas. We ruled out an epileptic attack and posterior reversible leukoencephalopathy, considering his symptoms, neurological examination, and MRI findings.

The management of migraine in patients with ischemic events involves avoiding triggering factors and effective migraine treatment with prophylactic drugs.[11] Beta-adrenergic blockers and calcium channel blockers have been used as effective migraine prophylactic agents for years.[11,12] Verapamil is probably an effective choice, but there is still bias on this topic because of conflicting evidence.[12] There are no recommendations for the use of antithrombotics for pharmacological prevention of stroke in migraine patients, but low-dose ASA is generally recommended for MI for secondary prophylaxis.[11]

Serrano et al.[4] followed up 15 MI patients aged between 18–55 years for 12 to 240 months with a treatment of 100 mg/d ASA. Laurell et al.[5] treated 79% of 33 patients with MI, ages between 19–76 years, with ASA and clopidogrel. Our patient was already taking ASA. We added verapamil to his treatment because of its vasodilator effect, to take his symptoms stemming from hemodynamic changes under control. He has been in follow-up for 10 months without any migraine symptoms.

It should be kept in mind that MI can present itself as a typical migraine attack with persistent aura at older ages without prominent vascular risk factors, and it can be taken under control with verapamil in a short period.

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