

Olfactory Hallucination in Association with Migraine: A Three-Case Series

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Abstract

Visual hallucinations and osmophobia are well known symptoms of migraine. Olfactory hallucinations are rarely reported in association with primary headache. We experienced 3 cases involving migraine patients with olfactory hallucinations. Olfactory hallucination has been included in the International Classification of Headache Disorders (ICHD) 2 appendix, but was deleted in ICHD 3. Since some data supported the high specificity of olfactory hallucination in the diagnosis of migraine, it should be included in ICHD 3.

Keywords: Olfactory hallucination; Olfactory hypersensitivity; Migraine

Abbreviations: ICHD: International Classification of Headache Disorders; MRI: Magnetic Resonance Imaging; MRA: Magnetic Resonance Angiography

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Introduction

Visual hallucinations and osmophobia are well known symptoms of migraine. Olfactory hallucinations are rarely reported in association with primary headache [1,2]. We experienced 3 cases involving migraine patients with olfactory hallucinations.

Case Reports

The first patient was a 28-year-old woman. She had experienced migraine without aura since she had been in junior high school. Her headaches were frontal pulsatile, associated with nausea and frequently occurred before and after her menstrual period. A neurological examination and brain magnetic resonance imaging and angiography (MRI and MRA) showed no abnormalities. Treatment with lomerizine and triptan was effective. She reported that she occasionally smelled smoke even though there were no smokers around her. This olfactory hallucination was not associated with her migraine attacks and was observed before the initiation of migraine therapy at our hospital. She experienced these olfactory hallucinations, which were not affected by migraine therapy, several times a year.

The second patient was a 45-year-old man. He had experienced migraine without aura with nausea and photo hypersensitivity for 10 years. Triptan was effective. The patient had undergone the surgical removal of a front-temporal atypical meningioma 7 years previously and had undergone surgery 3 years previously for recurrence. He reported experiencing olfactory hallucinations several times a year in which he perceived the smell of urine. His olfactory hallucination was

not associated with his migraine attacks. This olfactory hallucination was not affected by treatment for meningioma or the administration of anticonvulsants.

The third patient was a 22-year-old woman. She had been diagnosed with thrombocytopenic purpura and was treated with prednisolone. She visited our hospital with severe frontal headache and vomiting. A neurological examination and brain computed tomography showed no abnormalities. We diagnosed the patient with migraine without aura. Treatment with sumatriptan was effective. She reported experiencing olfactory hallucinations in which she perceived a sweet smell; however, her hypersensitivity was not remarkable.

Discussion

Olfactory hypersensitivity, which typically presents as osmophobia or olfactophobia, is well known symptom of migraine [1,2]. Olfactory or gustatory hallucinations, which are phantosmias, differ from olfactory hypersensitivity and are observed in the patients with temporal lobe epilepsy, Parkinson's disease and schizophrenia [3]. Although the olfactory hallucinations in patients with schizophrenia are not experienced as real smells, the olfactory hallucinations experienced by migraine patients are sensed as a real, unpleasant smell. In our 2 patients, the olfactory hallucinations were not associated with migraine attack; thus, they did not represent a symptom of aura. Although most olfactory hallucinations that are reported in association with migraine are associated with aura, olfactory hallucinations that not

related to migraine attacks have been reported in some cases. Olfactory hallucinations have also been reported in association with cluster headache and hemicranias continua [3]. Although the pathophysiology of these olfactory hallucinations is not clear, dysfunction and/or hypersensitivity of the temporal lobe or olfactory structures and the degeneration and/or dysmodulation of the dopaminergic, serotonergic and cholinergic systems are suspected to be involved [1,3]. Olfactory hallucination has been included in the International Classification of Headache Disorders (ICHD) 2 appendix, but was deleted in ICHD 3 [4]. Since some data supported the high specificity of olfactory hallucination in the diagnosis of migraine, it should be included in ICHD 3.

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