Headache
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ISSN 0017-8748
doi: 10.1111/head.13964
Published by Wiley Periodicals, LLC.

Clinical Correspondence

Migraine Improvement During COVID-19 Pandemic – A Case Report on the Wonders of a Mask

Bárbara Martins, MD, MSc ; Andreia Costa, MD, MSc

Key words: osmophobia, odor-trigger, migraine, mask, COVID-19

Abbreviation: COVID-19 coronavirus disease 2019

(*Headache* 2020;0:2608-2609)

The highly contagiousness nature of severe acute respiratory syndrome coronavirus 2 has compelled health institutions across the globe to adopt facial mask use by healthcare professionals.[1] While coronavirus disease 2019 (COVID-19) occurs in about 13% of cases with a new, poorly defined headache, there is growing evidence that facial masks, mainly N95 masks, may predispose as much as 81% of healthcare workers to new headaches or a worsening of preexisting headaches.[1] Head/facial pain or ear lobe discomfort combined with possible inadequate hydration and a component of induced hypoxia and/or hypercapnia can contribute to these headaches.[1] This case report presents an unintended, positive, effect of wearing a surgical mask.

From the Neurology Department, Centro Hospitalar Universitário de São João, E.P.E., Porto, Portugal (B. Martins and A. Costa); Clinical Neuroscience and Mental Health Department, Faculty of Medicine, University of Porto, Porto, Portugal (B. Martins and A. Costa).

Address all correspondence to B. Martins, Neurology Department, Centro Hospitalar Universitário de São João, E.P.E., Porto, Portugal, email: barbarapmartins6@gmail.com

Accepted for publication July 30, 2020.

A 43-year-old female, working as an administrative officer in a tertiary hospital, had a history of migraine without aura since she was 12 years old. She described the pain as pulsatile, in the frontal region with occipital irradiation, often associated with photo- and phonophobia, accompanied by nausea without vomiting. These episodes were frequently precipitated by strong odors such as perfume fragrances, perspiration, and the smell of onions. Typically, just a few minutes after exposure, a severe headache begins (gradual peaks to 10 out of 10 in the numeric scale of pain). The headaches are frequently refractory to early taken paracetamol 1 g and nonsteroidal anti-inflammatory drugs, and require lying down in the dark. They can last around 72 hours. The headaches render all smells less tolerable. Eight years previously, the patient attempted migraine prophylaxis with adequate dosing of topiramate, and then, propranolol with little effect. She was recently referred to a neurology outpatient appointment to study and treat this refractory migraine. The patient was first observed in June 2020,

Conflict of Interest: None
Funding: None

during the COVID-19 pandemic, and reported not having any headache episode for 3 months – since the state of emergency declaration, and with the mandatory use of a facial surgical mask in her workplace. She stated not having any respiratory symptom and loss of smell or taste. She was similarly exposed to the same smell triggers and even higher stress levels, but she did not register any more episodes of headache. Her physical examination was normal. With the use of a well-sealed surgical mask, it was already possible to visit a perfume store.

Osmophobia is the fear, dislike, or aversion to odors; it occurs more frequently in primary headaches, mainly in migraine, with a variable reported frequency of 20-86%;[2] it has also been associated with more severe migraine intensity.[2]

Several authors have pointed out osmophobia not only as very specific, but also a very insensitive element within the diagnosis of migraine, being rarely associated with another type of primary headache.[2,3] Recently, a prospective study found that 28% of persons with migraine disease reported osmophobia exclusively during a headache attack without any associated symptoms, including nausea/vomiting or photo/phonophobia, suggesting that the inclusion of osmophobia in the International Classification of Headache Disorders-3 criteria for migraine would allow an increased diagnostic sensitivity by 9%;[3] however, this inclusion proposal remains a subject of debate.[2]

Few studies have shown that odors may also trigger headache attacks, even in low concentrations and with odors that are commonly well tolerated by the general population.[2,3] Perfume fragrances are the most often reported triggers, particularly those with floral scent;[2] others include cigarette smoke, cleaning products, petroleum-derived products, or certain foods, in particular those with strong flavors and rarely alliaceous foods (like onions).[4] The mean time interval for triggering headache has been recorded as anything from few minutes to 118 minutes.[5]

The pathophysiology of this susceptibility to smells is unknown. Nevertheless, some authors suggest that during migraine attacks, there is an alteration in olfactory processing and activation of specific regions involved in both the olfactory and trigeminal systems.[2,5] Another hypothesis is the stimulation by odors of the locus coeruleus, causing noradrenaline release, and consequently, substance P and calcitonin gene-related peptide release – potent vasodilators that may induce neurogenic inflammation and firing of nociceptive meningeal neurons.[2,4] Transient receptor potential ankyrin 1, a nonselective cation channel expressed in sensory neurons, has also been implicated in the activation of the trigeminovascular system favoring central sensitization and cutaneous allodynia.[2] Furthermore, some authors reported that in migraine patients there is a smaller olfactory bulb volume suggesting that if osmophobia is an olfactory dysfunction, its presence may contribute to even more reduced bulb volume.[2]

In summary, we report an uncommon case of a migraine triggered exclusively by odors, associated with osmophobia, including the infrequently reported onion scent,[4] that was successfully and unintentionally managed with a surgical face mask. Others have previously reported odor-triggered migraine relief with a nose plug and/or counter stimulation with peppermint.[4] Nevertheless, during the current pandemic, we think this management strategy is noteworthy.

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