



# “Good Perfume, But it gives me a Headache Attack”.

## Osmophobia as a Clinical Marker of Migraine

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### Editorial

[“*Olfactorius in his sensus infectus est, neque quicquam eos bene olens oblectat; pariter quoque graveolentia detestantur...*”]

*Their sense of smell is vitiated, neither does anything agreeable to smell delight them; and they have also an aversion to fetid things...*

Aretaeus, the Cappadocian [1].

Despite the fact that osmophobia is not currently considered among the formal criteria of the International Classification of Headache Disorders (ICHD-3beta) for the diagnosis of migraine [2], its occurrence during a migraine attack is known since ancient times.

Aretaeus the Cappadocian (II d.C.) in chapter 2 of his treatise *De causis et signis acutorum et chronicorum morborum libri septem* provided what should be considered the first description of osmophobia and aversion to odors in migraineurs [3,4]. Moreover, Galen (129-199 AD) noted that the perception of aromatic smell could trigger a migraine attack [5].

Several centuries later, the most representative author of the Arabian-Persian medicine, Avicenna (980 ca. - 1037), in his masterpiece “*Qanoon fel teb*” (“*Liber Canonis medicinae*”) indicated the potential effect of pleasant or unpleasant odors as a causative factor in provoking a migraine attack [6]. Several centuries later, in 1642, the Dutch physician Johan van Beverwijck (1594-1647) published a treatise, that was never translated in other languages (*Schat der ongesontheit*), in which the olfactive stimulus is cited among the trigger factors of migraine [6]. Moreover, in the “*De morbis artificum diatriba*” (1700) by Bernardino Ramazzini, which represents the first modern treatise devoted to Occupational Medicine, the relationship between migraine and odors is reported in several passages. Ramazzini identified categories of workers that are prone to suffer from headache after prolonged exposure to odors; among them, apothecaries, tanners, oil producers, carpenters. The author himself reported the onset of headache attacks after visiting their workshops [7]. In 1873, sir Edward Liveing in his book “*On megrim, sick-headache, and some allied disorders*” reported that both Romberg, in “*Disease of the nervous system*”, and Labarraque, in “*Essai sur la cephalalgie et la migraine*” indicated odors as a trigger factor inducing a migraine attack [8].

Concluding this brief historical review, in his “*A Manual of the diseases of the nervous system*” (London 1888) sir William Gowers, he stated that a particular odor could trigger a migraine attack in predisposed patients [9].

These fragmentary citations indicate that the role of olfactive stimuli in triggering or aggravating a migraine attack was noted since ancient times.

In 1985 Blau et al. [10] found that osmophobia was present in 40% of the 50 migrainous patients enrolled in the study.

However, in the first edition of the worldwide accepted international classification of headache disorders (ICHD) [11], which appeared three years later, osmophobia was not considered among the possible accompanying symptoms of a migraine attack.

Curiously, this issue was not further investigated, and received attention by researchers only in the last 10 years.

On the basis of limited investigations published a few years before, osmophobia was inserted in

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the Appendix of the second edition of ICHD published in 2004 [12], to stimulate further research studies in order to validate or not its formal and definitive insertion in the following ICHD edition.

A study published in 2007 evaluated osmophobia in relation to the diagnosis of migraine and episodic tension-type headache (ETTH) [13]. Osmophobia was present in 43% of the 807 migrainous patients (migraine without aura: 44%; migraine with aura 39%), while no one of the 198 patients with TTH reported this symptom. As a whole, the results of this study indicated clearly that osmophobia could add specificity to the diagnosis of migraine and should be considered as a clinical marker for its diagnosis.

Since the publication of the ICHD-II, 112 papers cited osmophobia as accompanying symptoms of headache, whose results were in line with the upper cited study.

Despite this, osmophobia surprisingly disappeared in the last edition of the ICHD [1] without explanation. A comprehensive review on the topic has been recently published on *Cephalalgia* [14]: in this review, the pooled prevalence of osmophobia in patients with a diagnosis of migraine (n=14360) and TTH (n=1864) was calculated; the results showed that the prevalence of osmophobia in migraine and tension-type headache was respectively 48% vs. 9% in the adult population and 23% vs. 8% in paediatric patients.

These results demonstrate the role of osmophobia as a clinical marker in the diagnosis of migraine and recommend its insertion in the formal migraine diagnostic criteria of the next ICHD [15].

## References

1. The Extant Works of Aretaeus, the Cappadocian. Aretaeus. Francis Adams LL.D. Boston. Milford House Inc. 1972 (Republication of the 1856 edition).
2. The International Classification of Headache Disorders 3beta. *Cephalalgia*. 2013; 9: 627-808.
3. Crasso GP. Aretaei Cappadocis medici insigni, ac vetustissimi libri septem Tipografia Remondiniana, Venetiis 46. 1763.
4. Koehler PJ. Aretaeus on Migraine and Headache. *J Hist Neurosc.* 2001; 10: 253-261.
5. Gorji A, Ghadiri MK. History of headache in medieval Persian medicine. *Lancet Neurol.* 2002; 1: 510-515.
6. Koehler PJ. Etiology and pathophysiology of headache in the early 17th century, as illustrated by the work of Johan van Beverwijck. *Cephalalgia*. 1997; 17: 817-821.
7. Zanchin G, Rossi P, Isler H, Maggioni F. Headache as an Occupational Illness in the Treatise "De Morbis Artificum Diatriba" of Bernardino Ramazzini. *Cephalalgia*. 1996; 16: 79-86.
8. Liveing E. On Megrin, Sick-Headache, and Some Allied Disorders. London: Churchill. 1873.
9. Gowers WR. A Manual of Diseases of the Nervous System. London: Churchill 788. 1888.
10. Blau JN, Solomon F. Smell and other sensory disturbances in migraine. *J Neurol.* 1985; 232: 275-276.
11. Headache Classification Committee of the International Headache Society: Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. *Cephalalgia*. 1988; 8: 1-96.
12. Headache Classification Committee of the International Headache Society. The International Classification of Headache Disorders. 2<sup>nd</sup> Edition. *Cephalalgia*. 2004; 24: 9-160.
13. Zanchin G, Dainese F, Trucco M, Mainardi F, Mapreso E, Maggioni F. Osmophobia in migraine and tension-type headache and its clinical features in patients with migraine. *Cephalalgia*. 2007; 27: 1061-1068.
14. Zanchin G, Fuccaro M, Battistella P, Ermani M, Mainardi F, Maggioni F. A lost track in ICHD 3 beta: a comprehensive review on osmophobia. *Cephalalgia*. 2016; 0333102416678390.
15. Mainardi F, Maggioni F, Zanchin G. Smell of migraine? Osmophobia as a clinical diagnostic marker. *Cephalalgia*. 2016; 0333102416658710.