

# Osmophobia in allodynic migraineurs: cause or consequence of central sensitization?

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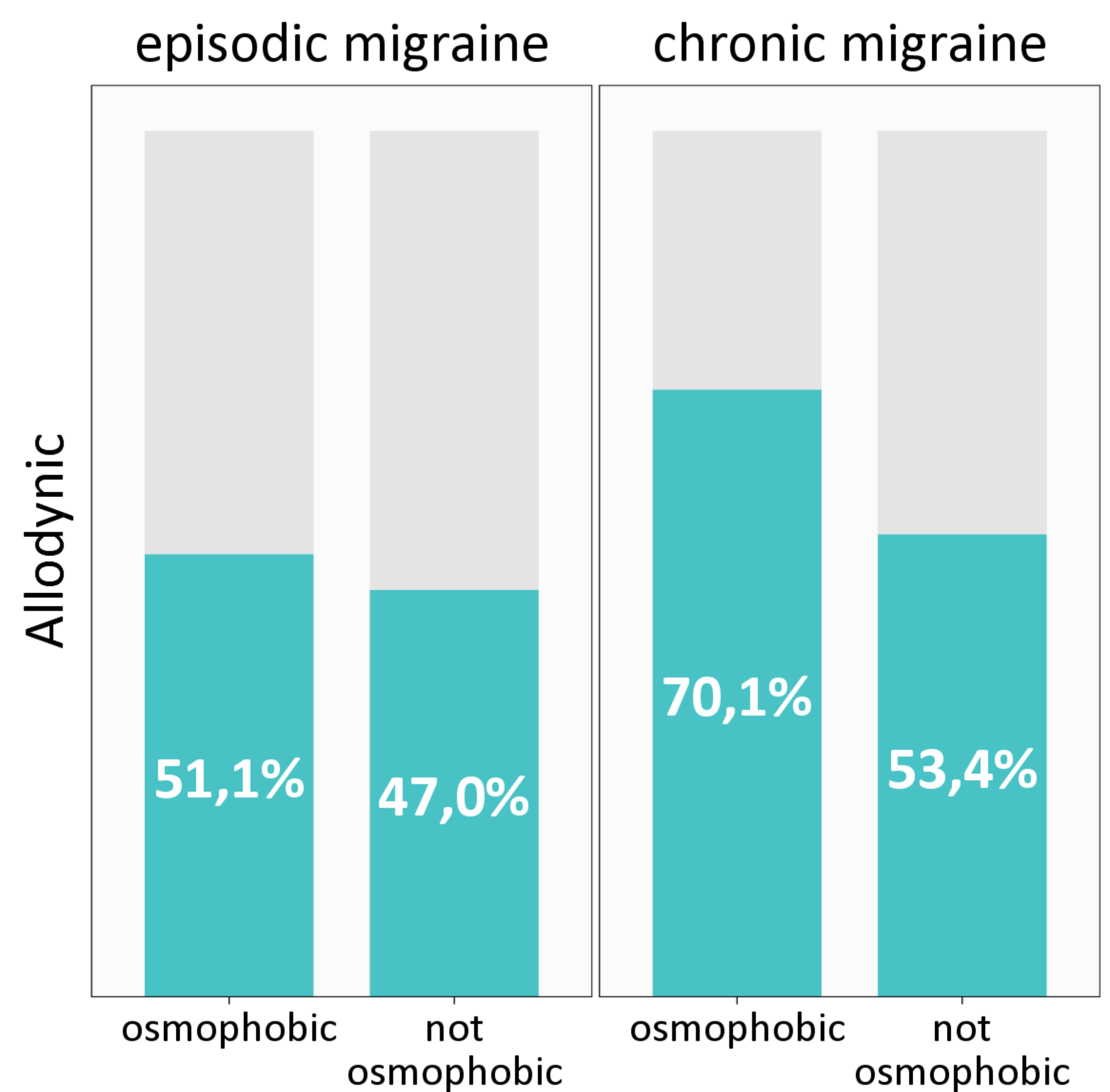
Migraine attacks are characterized by pulsating head pain associated to nausea or vomit, photophobia, phonophobia and osmophobia. Migraine-associated osmophobia seems to be a very specific complaint, even if it is not included in diagnostic criteria [1]. Cephalic cutaneous allodynia (CA) is very common during migraine attacks, and it is the most evident clinical manifestation of central sensitization, the mechanism involved in migraine chronification, as evidenced by the higher proportion of allodynic subjects among chronic migraineurs with respect to episodic ones [2]. The aim of this study was to identify the possible relationship between osmophobia and CA in migraineurs.

**Materials and Methods:** we studied 871 patients with migraine attending our headache centre (608 episodic, 263 chronic). We interviewed the patients for the presence of CA and osmophobia during migraine attacks. The prevalence of osmophobia and of CA was calculated. Chi square test with Bonferroni correction was used to assess the correlation between these two symptoms.

**Results:** CA was more frequent among chronic rather than in episodic migraineurs (58.9% of chronic patients, 48.1% of episodic patients) while the prevalence of osmophobia was similar in the two groups (33.1% in chronic migraineurs, and 29.3% in episodic patients). The association between these two symptoms was significant in the whole group ( $p=0.016$ ) and among chronic migraineurs ( $p=0.007$ ) at Chi square test.

**Discussion:** we found a relationship between CA and osmophobia, particularly in patients with chronic migraine. This may be interpreted in different ways: central sensitization induced by recurrent pain stimulation may induce a distortion of both cutaneous sensitivity (CA) and olfaction (osmophobia); alternatively, the recurrent olfactory stimulation in subjects with a hypersensitivity to olfactory stimuli may co-work with repetitive pain stimulation to induce the central sensitization process.

**Conclusions:** osmophobia could be a cause or a consequence of central sensitization in allodynic migraineurs. Further studies should investigate these hypotheses, possibly comparing prospectively the frequency of osmophobia and CA since the onset of a migraine history.



[1] Baldacci F, et al. Clinical features associated with ictal osmophobia in migraine. *Neurol Sci* 2015 Jan 29;36(1):43-6.

[2] Lovati C, et al. Cutaneous Allodynia in migraine: frequent random association or unavoidable consequence? *Expert Rev Neurother*. 2009 Mar; 9(3):395-408