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Comparative analysis between quantitative sensory testing and the allodynia symptom checklist (ASC-12) in patients with migraine

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Introduction
Migraine is a complex neurobiological disorder influenced by genetic factors. Increased frequency and intensity of attacks often lead to peripheral and central sensitization of the nervous system. This phenomenon promotes allodynia, painful perception of innocuous stimuli, which serves as a critical marker for migraine chronification. Despite its clinical relevance, there is a lack of consensus regarding the association between common assessment tools, such as the von Frey monofilament test (objective) and the Allodynia Symptom Checklist (ASC-12) (subjective), which may impact the management of this dysfunction. Objective: To identify whether there is an association between the measures of different instruments in the detection and classification of allodynia in patients with migraine. Specifically, the study sought to correlate ASC-12 scores with mechanical stimulation responses evaluated by von Frey monofilaments.

Objective
To analyze the association and correlation between the ASC-12 questionnaire and von Frey monofilaments in detecting, quantifying, and classifying allodynia in migraine patients; and compare how both instruments behave across different severity levels and intensities of allodynia.

Methods
This was an observational, cross-sectional study conducted at the Laboratory of Neuroscience Research (LAPENE/UFS). The sample consisted of 27 individuals diagnosed with migraine (chronic or episodic). Allodynia was assessed using two methods: 1) von Frey monofilaments (esthesiometry) to objectively measure tactile sensitivity and sensory perception thresholds in the trigeminal and forearm regions; and 2) the ASC-12 questionnaire, a validated tool to evaluate the presence and severity of cutaneous allodynia through self-reporting. Statistical analysis included the Shapiro–Wilk test for normality, Spearman's correlation coefficient, and the Kruskal–Wallis test to compare instrument responses across different severity levels.

Results
The sample had a mean age of 34.5±9.6 years. Analysis showed no statistically significant correlation between the ASC-12 and von Frey monofilament measurements (rho=-0.059; p=0.771). Furthermore, the Kruskal–Wallis test revealed no significant differences in mechanical sensitivity thresholds across the different allodynia severity levels classified by the ASC-12 (p = 0.417). There was no consistent trend or direct correspondence between the subjective self-reported severity and the objective physical measures.

Conclusion
The results demonstrate an absence of statistical association between the ASC-12 and von Frey monofilaments in this sample. These findings suggest that the instruments evaluate distinct dimensions of allodynia: the ASC-12 captures functional perception in daily life (subjective), while monofilaments measure the sensory detection threshold (objective). Therefore, a complementary diagnostic approach using both tools is necessary for a comprehensive clinical evaluation of migraine patients.

Keywords:
Migraine
Hyperalgesia
Sensory threshold

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