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Association between plasma levels of interleukin 1β and clinical aspects of migraine

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Introduction
Migraine is a highly prevalent and relevant disease, significantly impacting the quality of life of its sufferers. Its etiology involves interactions among genetic, immunological, and environmental factors; however, the mechanisms underlying its pathophysiology remain poorly understood. Studies indicate an association of inflammatory cytokines with specific stages of the disease. interleukin (IL)-1βis known to activate various inflammatory pathways, which are important in the pathogenesis of migraine.

Objectives
This study aims to evaluate the association between plasma IL-1βlevels and clinical aspects of migraine.

Methods
A case-control study was carried out with individuals diagnosed with migraine and treated at the Headache Clinic of Pontifical Catholic University of Paraná, Campus Londrina, Paraná, Brazil. Peripheral blood samples were collected from patients with migraine (case group) and healthy individuals (control group). Structured interviews and self-administered questionnaires were used to obtain epidemiological, clinical, and therapeutic data. IL-1βlevels were measured using the immunofluorimetric assay.

Results
A total of 176 individuals were included, including 80 patients with migraine (case group) and 96 controls. Among the 80 patients, 62 (77.5%) were female, and among the 96 controls, 68 (70.8%) were female. There were no significant differences in sex, age, or ethnicity between patients and controls (p>0.05). Of the 80 patients, 32 (40.0%) reported the presence of aura, 71 (88.7%) reported photophobia, 65 (81.2%) phonophobia, and 46 (58.2%) reported osmophobia. The IL-1βvalues ranged from non-detectable (<9.0 pg/mL) to 116.8 pg/mL, with a median of 9.0 pg/mL (interquartile range of 90.51 pg/mL). Patients with migraine had an average IL-1βlevels of 10.38±12.25 pg/mL, while controls had an average of 10.10±6.46 pg/mL (p=0.855). Significant associations were found between higher IL-1βlevels and chronic migraine (p=0.015) and migraine with aura (p=0.026), while other variables did not show significant differences (>0.05). A marginal association was observed between IL-1βlevels and migraine disability evaluated using the MIDAS questionnaire (p=0.059).

Conclusion
This study contributes to a better understanding of migraine management by considering IL-1βlevels in relation to specific clinical characteristics, as well as suggests IL-1βas a possible biomarker for the disease and/or new target for specific medications.