# Micro RNA-146, HMGB1 and IL-17 profile and cognitive symptoms in chronic migraine

**H. Gök Dağıdır**[I], D. Bandırmalı[II], M.H. Ceren Akgör[III], D. Vurallı[III], M. Yalınay[IV], G. Gümüş Akay[II], H. Bolay Belen[III]

[I]Gazi University, Faculty of Medicine, Department of Medical Biochemistry, Neuroscience and Neurotechnology Center of Excellence (NÖROM), Ankara, Türkiye, [II]Ankara University, Faculty of Medicine, Department of Physiology, Neuroscience and Neurotechnology Center of Excellence (NÖROM), Brain Research Center (AÜBAUM), Ankara, Türkiye, [III]Gazi University Hospital, Department of Neurology and Algology, Neuroscience and Neurotechnology Center of Excellence (NÖROM), Ankara, Türkiye, [IV]Gazi University, Faculty of Medicine, Department of Clinical Microbiology, Ankara, Türkiye

Objective:Chronic migraine (CM) is a complex neurological disorder primarily affects women, and characterized by reduced the quality of life and productivity due to chronic headaches, sensory hypersensitivity and comorbidities. The role of inflammation and innate immune system such as HMGB1 has been shown. micro RNAs in migraine pathogenesis is one of the issues that has attracted attention recently (1). miR-146, has negative regulatory properties in the TLR-4/NFkb pathway (2). IL-17 is a pro-inflammatory cytokine that can be triggered by HMGB1 and related to inflammation and cognition. In our study, we aimed to investigate the relationship between these parameters in CM.

Materials and Methods: This study enrolled 35 woman subjects. Serum samples were collected from CM patients (n=20) and age matched non-headache healthy controls (n=15). Clinical features and migraine related cognitive symptoms scale (MigScog) were recorded. Serum HMGB1 and IL-17 were evaluated by ELISA method. Serum miR-146 levels were detected by quantitative Real-time PCR (RT-qPCR). Statistical analysis of the data was performed by the SSPS 25.0.

Results: Serum HMGB1 ($p=0.012$) levels were significantly higher in CM patients than control while IL-17 ($p= 0.737$) and miR-146 ($p=0.560$) were comparable in 2 groups. There was no significantly correlation between HMGB1 and IL-17($r=0.167$) in addition HMGB1 and miR146 ($r=0.073$). MigScog ($p=0.001$) was significantly higher in CM patients and it was positively correlated with HMGB1 ($r=-0.403$).

Conclusion: We demonstrated elevated serum HMGB1 levels in CM patients. Serum HMGB1 levels showed correlation with migraine related disability but not with serum levels of miR-146 and IL-17. We suggest that HMGB1 may be a potential biomarker and therapeutic target for chronic migraine (3-4).

Keywords: CM, Migscog, miR-146, HMGB1, IL-17

Acknowledgment: The study was supported by TÜBİTAK-1004 (23AG014), the Gazi University ADEP project (TGA-2022-7857) and the TÜBA.