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Purinergic profiling of regulatory T-cells in patients with episodic migraine

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Abstract

© 2018 Nurkhametova, Kudryavtsev, Khayrutdinova, Serebryakova, Altunbaev, Malm and Giniatullin. Objectives: Immune responses in migraine are poorly characterized, yet implicated in the disease pathogenesis. This study was carried out to characterize purinergic profiles of T-cells in patients with episodic migraine without aura (MWoA) to provide mechanistic evidence for ATP and adenosine involvement in modulation of immune regulation in migraine. Methods: Peripheral blood samples were obtained from patients with migraine (n = 16) and age-matched control subjects (n = 21). Subsets of T-cells were identified by flow cytometry based on specific membrane markers. Results: Migraine patients showed reduced total T-cell counts in the peripheral blood. Whereas the total number of CD3+CD4+, CD3+CD8+, or regulatory T lymphocytes (Treg) was not changed, the proportion of Treg CD45R0+CD62L– and CD45R0–CD62L– cells was increased. Interestingly, in migraine, less Treg cells expressed CD39 and CD73 suggesting disrupted ATP breakdown to adenosine. The negative correlations were observed between the duration of migraine and the relative number of CD73+CD39– Tregs and total number of CD73-positive CD45R0+CD62L+ Tregs. Conclusion: Obtained data indicate that T-cell populations are altered in episodic migraine and suggest the involvement of Tregs in the pathophysiology of this disorder. Reduced expression of CD39 and CD73 suggests promotion of ATP-dependent pro-inflammatory and reduction of adenosine-mediated anti-inflammatory mechanisms in migraine.

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Keywords

Adenosine, ATP, Migraine, Purinergic signaling, Regulatory T cells

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