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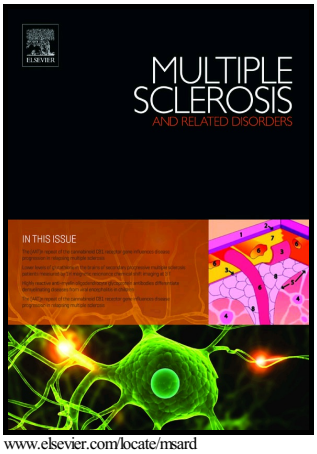
Aylin Akcali, Fatma Zengin, Sefika Nur Aksoy, Orhan Zengin

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# Fatigue in Multiple Sclerosis: is it related to cytokines and hypothalamic-pituitary-adrenal axis?

Aylin Akcali[1*], Fatma Zengin[1], Sefika Nur Aksoy[2], Orhan Zengin[3]

[1] Department of Neurology, Medical School, Gaziantep University, Gaziantep, Turkey.

[2] Department of Biochemistry, Medical School, Gaziantep University, Gaziantep, Turkey.

[3] Department of Internal Medicine, Medical School, Gaziantep University, Gaziantep, Turkey.

[*]**Corresponding author**: Aylin Akcali, MD, Assoc. Prof. **Address**: Noroloji Anabilim Dalı, Gaziantep Universitesi Tıp Fakultesi, 27310 Sahinbey, Gaziantep-Turkey, **Phone** : +90 342 360 60 60, **Fax**: +90 342 360 39 28. **e-mail** : draylinakcali@gmail.com



Abstract:
Background:
Fatigue is a common symptom of Multiple Sclerosis (MS) that diminishes the quality of life of patients, but its exact mechanism remains poorly understood. There is not a generally adopted scale to determine MS fatigue. Studies that investigated physiopathology of fatigue symptom have shown dysregulation of hypothalamic-pituitaryadrenal (HPA) axis. In the current study, we aimed to compare the results obtained with two separate scales, namely the Fatigue Severity Scale (FSS) and the Neurological Fatigue Index-Multiple Sclerosis (NFI-MS), and assess the relationship between fatigue and serum IL-1β, TNF-α, IL-35, IL-2, IL-10, ACTH, cortisol, α-MSH, β-MSH, γ-MSH and CLIP (Corticotropinlike intermediate lobe peptide) in MS patients categorized as fatigued and non-fatigued on the basis of FSS scores.
Methods:
For the study, a total of 54 (29 females, 25 males) patients diagnosed with RRMS including 26 with fatigue symptom (48.1%), and 26 healthy controls (13 females, 13 males) were enrolled. A FSS score ≥36 was