Autonomic symptom burden can predict disease activity in early multiple sclerosis

T. Pavičić[1], M. Krbot Skorić[1,2], L. Crnošija[1], T. Gabelić[1,3], B. Barun[1,3], I. Adamec[1], A. Junaković[1], B. Ruška[1], M. Habek[1,3]

[1]*Department of Neurology, Referral Center for Autonomic Nervous System Disorders, University Hospital Center Zagreb, Croatia*

[2]*Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia*

[3]*School of Medicine, University of Zagreb, Croatia*

Background: We aimed to evaluate the role of autonomic nervous system (ANS) abnormalities on disease activity (relapses and new MRI lesions) and disease progression in people with clinically isolated syndrome (pwCIS). Methods: Out of 121 consecutive pwCIS, data on disease activity and progression after 2.9 (1.4-4.1) years of follow-up was available for 94 pwCIS. Baseline characteristics included MRI parameters, Composite Autonomic System Score-31 (COMPASS-31), Composite Autonomic Scoring Scale and supine and standing levels of epinephrine and norepinephrine. Results: Univariable logistic regression analysis revealed three predictors for occurrence of new relapse: COMPASS-31 7.32, total number of T2 lesions 3 and decreasing supine level of epinephrine. The Kaplan-Meier survival analysis has shown that patients with COMPASS-31 7.32 have statistically significant lower probability that they will be relapse free (p=0.013). It has also shown that the relative risk reduction for occurrence of new relapse in participants with COMPASS 7.32 was 46%. The multivariable regression model confirmed that COMPASS-31 7.32 and total number of T2 lesions 3 increase the likelihood and the increasing supine level of epinephrine reduces the likelihood of a relapse. Finally, results of the Cox regression analysis showed, that after controlling for age, sex, total number of T2 lesions 3 and supine level of epinephrine, the hazard for occurrence of new relapse for participants with COMPASS-31 7.32 is 2.7 times that of participants with COMPASS-31 7.32. Conclusion: This study provides evidence that ANS is an important contributor to development of disease activity in pwCIS.