

ALTERATIONS IN FMRI RESTING STATE NETWORKS IN CLUSTER HEADACHE

P. Faragó¹, N. Szabó^{1,2}, G. Csete¹, A. Király¹, E. Tóth¹, K. Kocsis¹, D. Szok¹, Á. Párdutz¹, J. Tajti¹, L. Vécsei^{1,3}, Z.S.T. Kincses^{1,2}

¹*Department of Neurology, Albert Szent-Györgyi Clinical Center, University of Szeged, Hungary*

²*International Clinical Research Center, St. Anne's University Hospital Brno, Czech Republic*

³*MTA-SZTE, Neuroscience Research Group, Hungary*

havasjon@gmail.com

Introduction: The cluster headache is one of the most painful headache disorders. A very severe unilateral retro orbital pain with autonomic symptoms characterizes this disease. This pain can cause anatomical and functional reorganizations in the brain during the attack, what remain in the pain free period. Therefore, in our study we investigated the resting state activity in cluster headache patients at pain free period.

Methods: T1 weighed images and T2* echo planar images were acquired in a 1.5T GE scanner from sixteen cluster headache patients and twenty healthy volunteers. All patients were in pain free period. Independent component analysis (ICA, FSL-MELODIC) was used to reveal the group specific resting state networks. Dual regression technique was applied to get the subject specific time courses and networks' spatial distribution.

Furthermore, a Fast Fourier Transform was applied on the subjects' time courses for each selected network. The networks' relative spectral power was defined and then the data points were compared (and Bonferroni corrected) between the groups with multivariate ANOVA.

Results: Four networks (right attention, left attention, visual and cerebellar) showed significant changes between the two groups in the power spectra. The alterations were found mostly in the higher frequency spectra bands. In all cases the cluster headache group showed higher activity compared to the control group.

Conclusion: The results revealed functional changes in cluster headache power spectra in pain free period. The findings are mostly under the areas that showed structural or functional connections to the hypothalamus by previous studies.