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SNS Serbian Neuroscience Society

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7th CONGRESS OF SERBIAN NEUROSCIENCE SOCIETY
with international participation

BOOK OF ABSTRACTS

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Serum IGG fraction from ALS patients alters redox homeostasis in the BV-2 microglial cell line

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Introduction. Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disorder that affects motor neurons. Having in mind well-documented facts that on one hand, ALS brain is under oxidative stress, and on the other that non-cell autonomous mechanisms involving glial cells contribute to the disease progression, we wanted to examine the effect of humoral factors immunoglobulins G from ALS patients (ALS IgG) on oxidative stress and antioxidative system of BV-2 microglial cell line. **Methods.** BV-2 cells were treated with ALS and control IgG (0.1 mg/ml). TNF-α release, oxidative stress markers and antioxidative enzymes activities were determined using biochemical assays (24 h treatment), while gene expression was determined using RT-qPCR (4 h treatment). ROS, cytosolic peroxide and pH alteration were evaluated with carboxy-H2DCFDA, HyPer and SypHer, respectively. **Results.** All tested ALS IgG (compared with control IgG) induced oxidative stress (rise in NO and lipid peroxidation), release of TNF-α and higher antioxidative defense (elevation of Mn- and Cu,Zn-superoxide dismutase, catalase, glutathione reductase with a decrease of glutathione peroxidase and glutathione). IgG from 4/11 ALS patients induced slow exponential rise of HyPer intensity and lower increase of SypHer intensity. None of the control IgG induced changes with neither of the indicators. Acute ROS generation was detected in 1/3 of ALS samples with carboxy-H2DCFDA. **Conclusion.** Our study demonstrates the potential role of inflammatory humoral factors, ALS IgGs, as triggers (via ROS generation) of the activation in microglia, known to occur in later stages of the disease.