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Chronic inflammation and impaired glucose metabolism in multiple sclerosis

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Insulin also plays a role in neuron growth, neuroplasticity, and neuro modulation. It has been hypothesized that *in vivo* impaired insulin functions may be involved in pathogenesis of demyelinating disease. There are limited data regarding glucose metabolism dysregulation in multiple sclerosis (MS). Present study investigates glucose and insulin metabolism in newly diagnosed MS patients in association to inflammatory markers. We examined 19 MS patients and 19 age, sex and body mass index (BMI) matched healthy controls. MS patients were newly diagnosed, untreated and with low Expanded Disability Status Scale (EDSS) score (1.1 ± 0.7). Plasma glucose, lactate, insulin and GLP-1 were measured during oral glucose tolerance test. Fasting adipokines, lipid and inflammatory parameters were analyzed. Insulin sensitivity indices (ISI) were calculated. MS patients had comparable fasting and post-load glucose concentrations as controls. Insulin response to oral glucose load in MS was increased ($p=0.022$). Insulin sensitivity was lower in MS compared to controls [ISI (Matsuda) $p=0.011$ and ISI (Cederholm) $p=0.032$]. We did not find any difference in inflammatory parameters (interleukin 6, tumor necrosis factor, C-reactive protein), nor in lactate, GLP-1, total, HDL and LDL cholesterol, triglycerides, resistin, leptin, adiponectin levels between groups. We found decreased insulin sensitivity with postprandial hyperinsulinemia in MS patients, which seems not to be related to chronic inflammation or physical inactivity. The role of hyperinsulinemia in CNS function impairment and insulin sensitizing therapy for better remyelination repair should be further investigated.

Biography

Adela Penesova has completed her PhD in 2006 (Comenius University in Bratislava, Slovakia) and she was a Post-doctoral fellow at Obesity and Diabetes Clinical Research Section, National Institute of Diabetes & Digestive & Kidney Diseases, National Institute of Health (NIH), Phoenix, AZ, USA. She is a Senior Scientist in a Center of Molecular medicine, SAS, and teacher for Faculty of Medicine, Slovak Medical University in Bratislava, Slovakia. She has published more than 33 papers in reputed journals and has been serving as an Editorial Board Member of repute for *Endocrine Regulation*.

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