Ihor Huk, Brain Disord Ther 2015, 4:4
http://dx.doi.org/10.4172/2168-975X.S1.002

OMICS International
conferenceseries.com

Global Summit on Stroke

August 03-05, 2015 Birmingham, UK

Neutrophil gelatinase-associated lipocalin (NGAL) - Is it relevant for the characterisation of a vulnerable carotid plaque?

Ihor Huk
Medical University of Vienna, Austria

Background: Neutrophil Gelatinase-associated Lipocalin (NGAL), known as a 25 kDa protein released by neutrophils, is recognized as a marker of renal injury. Its potential role in cardiovascular pathologies is currently under intensive investigation. The aim of our study was to investigate clinical relevance and possible pathophysiological mechanisms of NGAL in carotid artery stenosis.

Methods: Atherosclerotic tissue and peripheral venous blood were collected from 150 patients undergoing carotid endarterectomies and correlated with clinical data, laboratory values and ultrasound findings. NGAL mRNA expression in atherosclerotic tissue was analyzed by PCR. Additionally, NGAL expression and response to NGAL were studies in cell types important for atherogenesis, namely macrophages, endothelial cells, and smooth muscle cells in vitro. NGAL levels were measured in peripheral blood of patients and in cell supernatants by specific ELISA.

Results: NGAL levels were significantly elevated in patients with vulnerable plaques compared to those with calcified plaques presumably by stimulation of various inflammatory cytokines. NGAL mRNA expression was higher in patients with symptomatic carotid stenosis compared to asymptomatic patients (71% as compared to 31%). Pro-inflammatory cytokines interleukin (IL)-6, IL-8, and monocyte chemoattractant protein (MCP)-1 were upregulated by NGAL in human monocyte-derived macrophages (MDM), human coronary artery smooth muscle cells and human umbilical vein endothelial cells (HUVEC). Moreover, treatment of MDM and HUVEC with tumor necrosis factor-a (TNF-a), Il-1b, oncostatin M (OSM), and IL-33 increased NGAL production in vitro.

Conclusion: NGAL is significantly elevated in vulnerable plaques especially in patients with symptomatic carotid stenosis.

Biography

Ihor Huk is the Director of Vascular Laboratory and Clinical Professor of Surgery, Director of Vascular Laboratory Dept. of Surgery, MUV Medical School. He completed his Post-graduate education from University of Chicago, Heidelberg Special Training: American Society in Parenteral and Enteral Nutrition transplant surgery. Since 1984 he performed more than 550 kidney, liver transplantation Vascular Surgery: Clinical, experimental Research (SPACE-Study), (L-arginine study). He is a member of Austrian Society of Surgery Austrian Society of Angiology Austrian Society of Vascular Surgery Ukrainian Academy of High Education Ukrainian Academy of Sciences and Senate -Zaporizhzhia Medical Postgraduate Academy Honoris causa.

ihor.huk@meduniwien.ac.at

Notes: