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DIFFERENT *CAVEOLIN-1* AND *ENOS* EXPRESSION IN SIMVASTATIN-TREATED PATIENTS WITH ABDOMINAL AORTIC ANEURYSM

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Introduction: This study was undertaken to verify if simvastatin modulates Cav-1/eNOS expression and if this modulation is associated with changes in pro- and anti-inflammatory cytokines and Toll-like receptor 4 (TLR4) in abdominal aortic aneurysm (AAA).

Methods: This was undertaken on non-statin (n=12) and simvastatin-treated patients (n=24) who underwent open AAA repair. Patients were treated with simvastatin at a dose of 20 or 40 mg/day for at least 6 months. The tissue samples of AAA wall were analyzed for Cav-1, eNOS, interleukin 6 (IL-6), IL-10, IL-17 and TLR4 at the gene and protein level.

Results: Simvastatin treatment significantly and dose-dependently decreased Cav-1 and increased eNOS expression in AAA wall ($p<0.05$ and $p<0.01$, respectively). The changes in Cav-1 and eNOS were associated with increased concentration of IL-10 ($p=0.055$) but not IL-6, IL-17 or TLR4 expression in AAA wall.

Conclusions: Simvastatin may modulate Cav-1 and eNOS expression in aneurysmal wall indicating a new beneficial role of statins in AAA patients

Recent Publications

1. Piechota Polanczyk A, Demyanets S, Nykonenko O, Huk I, Mittlboeck M, Domenig C M, Neumayer C, Wojta J, Nanobachvili J and Klinger M (2013) Decreased tissue levels of cyclophilin A, a cyclosporine a target and phospho-ERK1/2 in simvastatin patients with abdominal aortic aneurysm. Eur J Vasc Endovasc Surg 45:682-688.
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3. Ricchiuti V, Lapointe N, Pojoga L, Yao T, Tran L, Williams G H and Adler G K (2011) Dietary sodium intake regulates angiotensin II type 1, mineralocorticoid receptor, and associated signaling proteins in heart. J Endocrinol 211:47-54.
4. Testa A, Spoto B, Sanguedolce M C, Parlongo R M, Pisano A, Tripepi G, Benedetto F A, Mallamaci F and Zoccali C (2012) eNOS and caveolin-1 gene polymorphisms interaction and intima media thickness: a proof of concept study in ESRD patients. Am J Hypertens 25:103-08.
5. Johnston W F, Salmon M, Su G, Lu G, Stone M L, Zhao Y, Owens G K, Upchurch G R Jr. and Ailawadi G (2013) Genetic and pharmacologic disruption of interleukin-1beta signaling inhibits experimental aortic aneurysm formation. Arterioscler Thromb Vasc Biol 33(2):294-304.

Biography

Aleksandra Piechota Polanczyk is currently employed as an Associate Professor at the Department of Medical Biotechnology, at the Jagiellonian University in the frame of the project entitled: Role of heme oxygenase 1 in the development and progression of abdominal aortic aneurysm. She received her PhD in Medicine with specialty of Medical Biology in 2011. She was a leading Researcher in Prof. Ihor Huk research group (VASLAB) at the Medical University of Vienna (Austria) with whom she is now cooperating. She is an author and a co-author of 37 publications published in Polish and foreign international journals (28 original papers and 8 review articles). Her research interests focuses on finding of new anti-oxidative and anti-inflammatory proteins that could be potential markers and/or targets in treatment of gastrointestinal and cardiovascular diseases, as well as the role of Nrf2 and heme oxygenase 1 in cellular adaptation to oxidative stress and inflammatory reactions

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