ES-PCR Meeting in Bratislava
21.-22.06.2018

Abstract (English)

Title
(in capitals)

ROLE OF NANOVESICLES IN THE DEVELOPMENT OF PERITONEAL FIBROSIS DURING PERITONEAL DIALYSIS

Author(s)

Beáta Szebeni [1,2], István Márton Takács[2], Zoltán Varga[3]; Domonkos Pap[1,2], Apor Veres-Székely[2], Attila J Szabó[1,2], György Reusz[2], Ádám Vannay[1,2]

Institution

[1]MTA-SE, Pediatrics and Nephrology Research Group, Budapest, Hungary
[2] I[st] Department of Pediatrics, Semmelweis University
[3]MTA-TTK Biological Nanochemistry Research Group

Text

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Background: Nanovesicles (NVs) have significant therapeutic potential. They can protect against myocardial infarction, acute kidney injury or liver fibrosis as well. In 2017 Pearson et al successfully isolated extracellular vesicles from dialysis effluents (PDE) of PD patients, however their impact on the development of peritoneal fibrosis during PD remained unclear. Our aim was to determine, whether NVs isolated from PDE can affect/alter progression of peritoneal fibrosis.
Methods: Three hundred ml of PDE have been collected from PD patients. NVs were isolated by different ways (ultrafiltration with MWCO filters or size exclusion chromatography) to obtain the most homogenous/concentrated NV fractions. NVs were analysed by dynamic light scattering (DLS) and Fourier transform infrared spectroscopy (FTIR). NRK-49F fibroblast cell line was treated with PDE derived NVs and their effect on the endogenous as well as platelet derived growth factor (PDGF) induced proliferation of this fibroblast cell line were measured by MTT test after 24h.
Results: The average size and size distribution of NVs was about 80 [40-150] nm (DLS). FTIR analyses revealed that protein and lipid content and protein to lipid ratio of PDE derived NVs was typical for this type of extracellular vesicles. Incubation of NRK-49F with PDE derived NVs significantly reduced both the endogenous and PDGF induced proliferation rate of these fibroblast cells.
Conclusion: NVs isolated from dialysis effluents of PD patients may inhibit peritoneal fibrosis contributing to the preservation of the peritoneal membrane structure. However, future *in vivo* and *in vitro* experiments are required for testing their therapeutic potential in PD and their impact as potential biomarker.
This project was supported by ÚNKP-17- 4-IV- SE-60 New National Excellence Program of the Ministry of Human Capacities and by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences

Send to:
Gabriela Sujanova
Congress secretariat
e-mail:
abstrakty@progress.eu.sk