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Abstract (English)

Title
(in capitals)

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

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Text

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.

Structure

Background
Methods
Results
Conclusion

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.

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