Abstract: **P6506**

**Circulating microparticles preceding endothelial dysfunction and inflammatory process in patients with pseudoexfoliative glaucoma**

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**Topic(s):**
Peripheral Vascular and Cerebrovascular Disease – Prevention

**Citation:**
Background: Pseudoexfoliative glaucoma (PEX) is a type of glaucoma characterized by the secretion of a grey-white, fibrogranular material in several tissues. Microparticles are shed membrane vesicles released from a variety of cell types in response to cellular activation or apoptosis and correlate with the pathogenesis of cardiovascular diseases. Endothelial MPs may be used as biomarkers of endothelial function.

Purpose: To evaluated the role of endothelial dysfunction, arterial stiffness and systemic inflammation in patients with PEX compared to patients with Primary open angle glaucoma (POAG) and control subjects as well as the possible pathophysiologic role of a specific microparticle profile associated with endothelial damage.

Methods: We enrolled 29 subjects with PEX, 57 subjects with POAG and 44 control subjects. Endothelial function was evaluated by flow-mediated dilation (FMD). Pulse wave velocity (PWV) was measured as an index of aortic stiffness and augmentation index (Aix) as a measure of arterial wave reflections. Growth differentiation factor-15 (GDF-15) and intercellular adhesion molecule1 (ICAM1) were measured to evaluate systemic inflammatory status. Total circulating MPs and EMPs were isolated and analysed by flow cytometry, utilizing specific labels for EMPs (CD 144+) and Annexin V staining for phospatidylerine bearing- MPs (AnnexinV + MPs).

Results: There was a linear impairment in FMD (p=0.005), PWV (p=0.007) and Aix (p=0.02) and a stepwise increase in GDF-15 (p=0.001) and sICAM-1 levels (p=0.08) between the three study groups (control, POAG, PEX). Interestingly, the PEX subjects expressed greater levels of total circulating MPs (Annexin V+) [1698 (1199-5894) MPs/µL vs. 1641 (1470-2705) MPs/µL vs 493 (417-1512) MPs/µL, p=0.004] and EMPs (CD144+)[1412 (645-1760) MPs/µL vs 1380 (498-2496) MPs/µL vs 34 (184-870) MPs/µL, p=0.001] compared to POAG and control subjects.

Conclusion: Pseudoexfoliative glaucoma is associated with impaired endothelial function, arterial wall properties and vascular inflammation with a parallel increase in EMPs. Our findings indicate the significant role of endothelial damage in the progress of glaucomatous disease especially in subjects with pseudoexfoliative glaucoma.
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