RELATIONSHIPS BETWEEN GLAUCOMA, ARTERIAL STIFFNESS AND INFLAMMATORY PROCESS

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Background: Reduced ocular blood flow, mostly caused by vascular dysregulation, plays a pivotal role in the pathogenesis of primary open-angle glaucoma (POAG). Glaucoma is also associated with peripheral vascular endothelial dysfunction. However the effect of POAG on vascular function and the inflammatory process is unknown. Therefore in the present study we evaluate arterial stiffness and inflammatory process in patients with POAG.

Methods: We enrolled 38 patients with POAG and 32 healthy age- and sex- matched normal control subjects, all of whom had no medical history of cardiovascular disease or cardiovascular risk factors. All subjects underwent a complete ophthalmological examination. Carotid-femoral pulse wave velocity (PWV) was measured as an index of aortic stiffness and augmentation index (AIx) as a measure of arterial wave reflections. Circulating levels of soluble interleukin -6 (IL-6) and soluble intercellular cells adhesion molecule (s-ICAM-1) were measured by ELISA.

Results: PWV values differed significantly in POAG patients (8.86±0.33m/s) compared with controls (7.56±0.33m/s) (P< 0.01). Also AIx values were 27.68±1.01% in the POAG group and 22.85±2.08% in the control group (P<0.05). Moreover, we found a significant increase in the release of IL-6 (2.54±0.36 pg/ml) and s-ICAM-1 (540.21±41.71 ng/ml) in POAG patients compared with controls (IL-6: 1.54±0.17 pg/ml, s-ICAM-1: 421.05±48.84 ng/ml) (P<0.05 for both), indicating an elevated inflammatory status in POAG patients. Finally a positive correlation was noted, only in the POAG group, between PWV and IL-6 (p<0.05, r=0.367).

Conclusion: These findings indicate that primary open angle glaucoma is a systemic disorder which affects vascular function and increases inflammatory process.