

SCIENTIFIC REPORT

Positive correlation between pigment epithelium-derived factor and monocyte chemoattractant protein-1 levels in the aqueous humour of patients with uveitis

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Aim: To evaluate whether aqueous humour levels of pigment epithelium-derived factor (PEDF) are associated with monocyte chemoattractant protein-1 (MCP-1) in patients with uveitis.

Methods: Aqueous humour levels of MCP-1 and PEDF were determined by ELISA in 34 uveitis samples and 9 cataract control samples.

Results: Aqueous humour MCP-1 and PEDF levels were significantly higher in patients with infectious or non-infectious uveitis than in controls (mean (SD) 32.3 (10.7) ng/ml vs 4.48 (1.10) ng/ml vs 0.47 (0.10) ng/ml, and 8.40 (1.30) µg/ml vs 5.01 (0.92) µg/ml vs 1.32 (0.22) µg/ml, respectively, $p < 0.001$). A positive correlation between PEDF and MCP-1 was found in patients with uveitis ($r = 0.39$, $p < 0.01$).

Conclusion: The results demonstrated that aqueous humour levels of PEDF were positively associated with MCP-1 in patients with uveitis. The present observations suggest that aqueous humour levels of PEDF may be a marker of inflammation in uveitis.

diseases such as uveitis is not fully understood. In this study, we examined whether aqueous humour levels of PEDF were associated with an inflammatory biomarker, monocyte chemoattractant protein-1 (MCP-1), in patients with active uveitis.⁵

PATIENTS AND METHODS

Informed consent was obtained from all patients. Patients with various clinical entities of strictly diagnosed active uveitis with a mean (SD) age of 48.5 (2.7) years ($n = 34$; 13 with infectious uveitis, 21 with non-infectious uveitis) were studied. Aqueous humour was collected from the patients under aseptic conditions. Nine aqueous humour samples were obtained during surgery from patients with cataract with a mean (SD) age of 65.2 (2.7) years, and served as controls. Aqueous humour levels of PEDF and MCP-1 were measured as described previously.⁶ Inter-assay ($n = 17$) and intra-assay ($n = 14$) coefficients of variation of the PEDF ELISA were 4.7% and 7.3%, respectively.⁶ The data were analysed by the Kruskal–Wallis test and Pearson's correlation coefficient by the rank test.

RESULTS AND DISCUSSION

As shown in fig 1A,B, aqueous humour mean levels of MCP-1 and PEDF were significantly higher in patients with infectious or non-infectious uveitis than in controls (32.3 (10.7) ng/ml vs 4.48 (1.10) ng/ml vs 0.47 (0.10) ng/ml, and 8.40 (1.30) µg/ml vs 5.01 (0.92) µg/ml vs 1.32 (0.22) µg/ml, respectively, $p < 0.001$). A positive correlation between PEDF and MCP-1 was found in patients with uveitis ($r = 0.39$, $p < 0.01$, fig 1C).

The present results demonstrate for the first time that aqueous humour levels of PEDF are positively correlated with

Abbreviations: MCP-1, monocyte chemoattractant protein-1; PEDF, pigment epithelium-derived factor

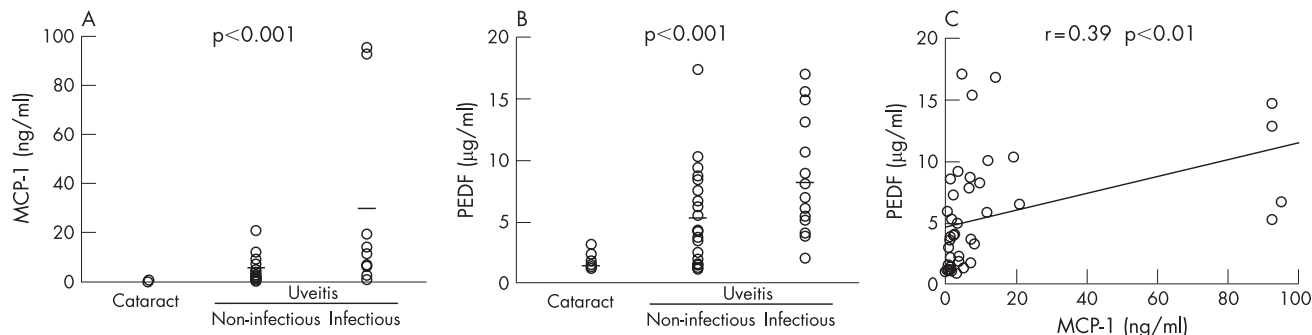


Figure 1 Aqueous humour levels of (A) monocyte chemoattractant protein-1 (MCP-1) and (B) pigment epithelium-derived factor (PEDF) in patients with uveitis and controls. The horizontal line indicates the mean concentration (Kruskal–Wallis test). (C) Correlation between aqueous humour levels of PEDF and MCP-1 in patients with uveitis. Pearson's correlation coefficient by rank test.

those of MCP-1 in patients with uveitis. We have recently found that PEDF inhibits advanced glycation end product-induced MCP-1 expression in endothelial cells through its antioxidative properties.⁷ In addition, Zhang *et al*³ reported that PEDF could act as an endogenous anti-inflammatory factor in diabetic retinopathy. Taken together, our present findings suggest that aqueous humour levels of PEDF may be increased as a countersystem against inflammation in uveitis and may be a novel biomarker of inflammation in uveitis.

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