

INTERSTITIAL LUNG DISEASE

Angiogenic cytokines in patients with idiopathic interstitial pneumonia

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Background: Angiogenesis has been implicated in the pathogenesis of idiopathic interstitial pneumonia (IIP). The aim of this study was to examine the relationship between plasma concentrations of the angiogenic cytokines interleukin 8 (IL-8), vascular endothelial growth factor (VEGF), and endothelin-1 (ET-1) and clinical parameters of disease progression over a 6 month period to identify potential aetiological mediators and prognostic markers of disease activity in patients with IIP.

Methods: Forty nine patients with IIP (40 men) were recruited to the study. Plasma cytokine measurements, pulmonary function tests, and high resolution computed tomography (HRCT) scans were performed on recruitment and after 6 months. Plasma cytokine measurements were also performed in 15 healthy volunteers for control purposes.

Results: Patients with IIP had significantly higher median (IQR) baseline concentrations of IL-8 and ET-1 than controls (155 (77–303) pg/ml *v* 31 (0–100) pg/ml, $p < 0.001$) and (1.21 (0.91–1.88) pg/ml *v* 0.84 (0.67–1.13) pg/ml, $p < 0.01$), respectively. Baseline concentrations of IL-8, ET-1, and VEGF were significantly related to the baseline HRCT fibrosis score ($r = 0.42$, $p < 0.005$; $r = 0.39$, $p < 0.01$; and $r = 0.42$, $p < 0.005$, respectively). Patients with IIP who developed progressive disease had significantly higher baseline levels of IL-8 (345 (270–497) pg/ml *v* 121 (73–266) pg/ml, $p = 0.001$) and VEGF (1048 (666–2149) pg/ml *v* 658 (438–837) pg/ml, $p = 0.019$). Over 6 months the change in VEGF was significantly related to the change in HRCT fibrosis score ($r = 0.565$, $p = 0.035$) and negatively related to the change in forced vital capacity ($r = -0.353$, $p = 0.035$).

Conclusions: These results support a role for angiogenesis in the pathogenesis of IIP, and IL-8 and VEGF deserve further evaluation as prognostic markers.

Abbreviations: DIP, desquamative interstitial pneumonia; ET-1, endothelin-1; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; IIP, idiopathic interstitial pneumonia; IL-8, interleukin 8; IPF, idiopathic pulmonary fibrosis; NSIP, non-specific interstitial pneumonia; TLC, total lung capacity; T_{LCO}, carbon monoxide transfer factor; VEGF, vascular endothelial growth factor

Keywords: idiopathic interstitial pneumonia; pulmonary fibrosis; angiogenesis; cytokines; prognostic markers