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Biomarker signatures for progressive idiopathic pulmonary fibrosis

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Shareable abstract (@ERSpublications)
Pathobiologically relevant circulatory biomarkers were found to be associated with IPF progression and mortality, and a statistical model incorporating these markers into a progression index score showed improved prognostication across all outcomes https://bit.ly/37L0oMl

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Abstract

Background Idiopathic pulmonary fibrosis (IPF) is a progressive lung disease in which circulatory biomarkers have the potential for guiding management in clinical practice. We assessed the prognostic role of serum biomarkers in three independent IPF cohorts: Australian Idiopathic Pulmonary Fibrosis Registry (AIPFR), Trent Lung Fibrosis (TLF) and Prospective Observation of Fibrosis in the Lung Clinical Endpoints (PROFILE).

Methods In the AIPFR cohort, candidate proteins were assessed by ELISA as well as in an unbiased proteomic approach. LASSO (least absolute shrinkage and selection operator) regression was used to restrict the selection of markers that best accounted for the progressor phenotype at 1 year in the AIPFR cohort, and subsequently prospectively selected for replication in the validation TLF cohort and assessed retrospectively in the PROFILE cohort. Four significantly replicating biomarkers were aggregated into a progression index model based on tertiles of circulating concentrations.

Results 189 participants were included in the AIPFR cohort, 205 participants from the TLF cohort and 122 participants from the PROFILE cohort. Differential biomarker expression was observed by ELISA and replicated for osteopontin, matrix metallopeptidase-7, intercellular adhesion molecule-1 and periostin for those with a progressor phenotype at 1 year. Proteomic data did not replicate. The progression index in the AIPFR, TLF and PROFILE cohorts predicted risk of progression, mortality and progression-free survival. A statistical model incorporating the progression index demonstrated the capacity to distinguish disease progression at 12 months, which was increased beyond the clinical GAP (gender, age and physiology) score model alone in all cohorts, and significantly so within the incidence-based TLF and PROFILE cohorts.

Conclusion A panel of circulatory biomarkers can provide potentially valuable clinical assistance in the prognosis of IPF patients.