A specific elastin fragment (ELP-3) as a potential serological biomarker to distinguish fibrotic from non-fibrotic hypersensitivity pneumonitis

ERS Virtual platform

F. B. Simões[1], N. Hoyer[2], S. Dræby[2], A. H. Hansen[1], M. A. Karsdal[1], D. J. Leeming[1], J. M. B.Sand[1], S. B. Shaker[2]

[1] Nordic Bioscience, Herlev, Denmark, [2] Department of Respiratory Medicine, Herlev and Gentofte University Hospital – Copenhagen, Denmark

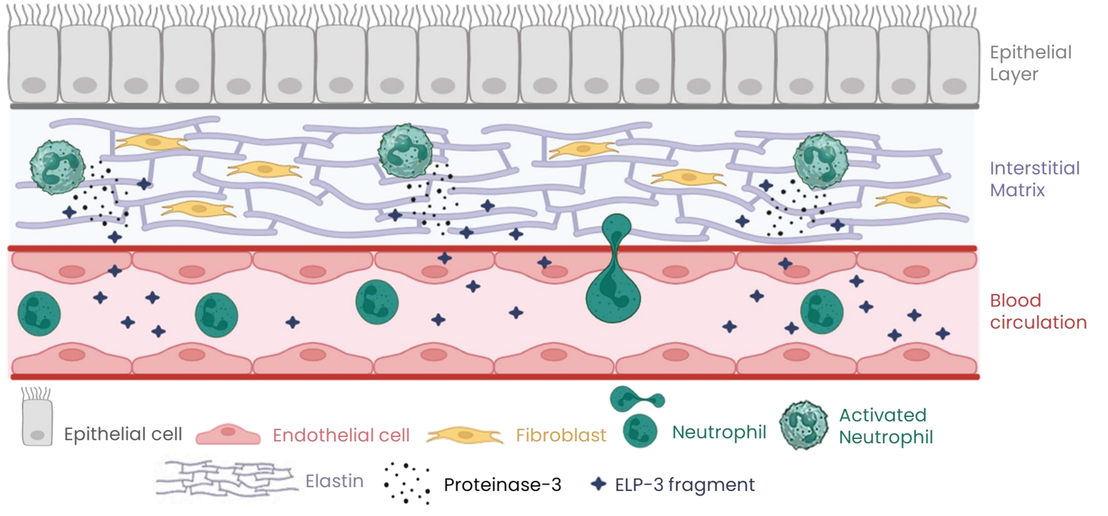
Background & Aim

- Hypersensitivity Pneumonitis (HP) is defined by an exaggerated immune response to antigens that may develop into pulmonary fibrosis.
- Elastin is a structural lung protein that is susceptible to degradation by activated neutrophils during inflammation via proteinase-3. This process releases elastin fragments into circulation that can be quantified by the nordicELP-3™ assay.

This study aimed to evaluate serum ELP-3 in HP and compare it with healthy, IPF and chronic obstructive pulmonary disease (COPD)

Methods

- Serum ELP-3 levels were measured by a competitive immunoassay using an automated platform (IDS-i10) in healthy controls (n=74), HP (n=43), COPD (n=22) and IPF (n=30) patients
- HP patients were classified as fibrotic (n=19) or non-fibrotic (n=17), based on radiology and histopathology

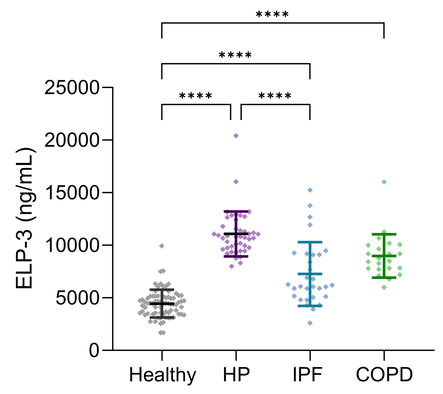


Elastin is a signature protein of the lungs
Proteinase-3 is released by activated neutrophils during inflammation

ELP-3 measures elastin degradation by activated neutrophils in the lungs

Results

ELP-3 in different chornic lung diseases



Healthy	HP
Median: 4472 ng/mL IQR: 3500 – 5142 ng/mL	Median: 10823 ng/mL IQR: 9753 – 11807 ng/mL p < 0.0001 (to healthy and IPF)
IPF	**COPD**
Median: 7000 ng/mL IQR: 6073 – 7552 ng/mL p < 0.0001 (to healthy)	Median: 8643 ng/mL IQR: 7781 – 10022 ng/mL p < 0.0001 (to healthy)

ELP-3 is elevated in HP, IPF and COPD compared to healthy

HP patients have higher serum ELP-3 compared to IPF patients

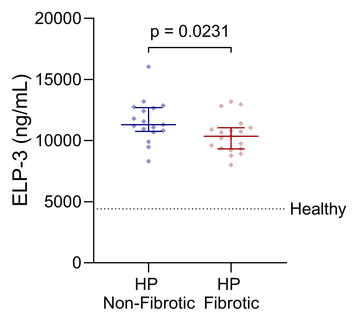
ELP-3 in fibrotic and non-fibrotic HP

Clinical characteristics

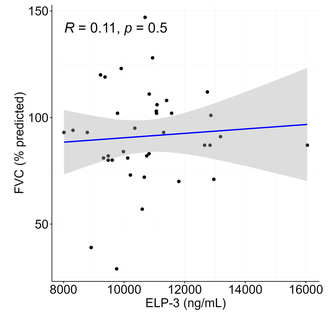
	Fibrotic (n = 19)	Non-fibrotic (n = 17)	p-value
Age, years	66.5 (60.5-69.8)	64.0 (50.0-69.0)	0.467
Male, n (%)	12 (66.7%)	5 (29.4%)	**0.028**
Former smoker, n (%)	12 (63.2%)	10 (58.8%)	0.790
BMI, kg/m^2	28.5 (25.5-31.4)	27.05 (25.5-29.3)	0.543
FVC, % predicted	85.0 (74.8-94.5)	101.50 (88.5-111.8)	**0.038**
DLCO, % predicted	54.5 (42.0-57.3)	54.0 (50.5-67.0)	0.328
CRP, mg/L	3.0 (3.0-6.0)	4.0 (3.8-5.5)	0.676
Leucocytes, 10^9/L	6.6 (5.7-8.3)	6.7 (5.4-8.8)	0.895
Thrombocytes, 10^9/L	234.0 (204.5-288.5)	263.5 (212.5-304.5)	0.766

BMI: body mass index; FVC: forced vital capacity; DLCO: diffusing capacity of lungs for carbon monoxide; CRP: C-reactive protein

Serum ELP-3 in HP



Spearman correlation with FVC



Serum ELP-3 can separate non-fibrotic from fibrotic HP patients

No correlation was observed between serum ELP-3 and FVC

Key Messages

- Serum ELP-3 is elevated in patients with different chronic lung diseases, particularly in HP
- ELP-3 could separate non-fibrotic from fibrotic HP patients

These findings highlight the potential value of ELP-3 as a biomarker that provides additional clinical information beyond conventional inflammation markers

Contact: Filipa Simões, fils@nordicbio.com
Disclosures: FBS, AHH, MK, DJL, and JMBS are employed at Nordic Bioscience and MK, DJL and JMBS are shareholders

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