Cystic Fibrosis Research News

Title:

Higher Interleukin-7 serum concentrations in patients with cystic fibrosis correlate with impaired lung function

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What was your research question?

Is the cytokine Interleukin-7 a suitable marker for the clinical disease course and infection state of individuals living with cystic fibrosis (CF)?

Why is this important?

Interleukin-7 is an important messenger protein for the development and maintenance of an effective immune response. An effective immune response is crucial for protection against chronic infections. In Cystic Fibrosis, chronic pulmonary infections strongly influence the predicted disease course and mortality of patients. In previous studies, we found higher IL-7 concentrations in the blood accompanied by a less-effective immune response in patients with tuberculosis. Taking this into account, higher Interleukin-7 blood levels in Cystic Fibrosis patients are a potential biomarker for a less-effective immune response associated with a decline of lung capacity.

What did you do?

Time course measures of Interleukin-7 serum concentrations were performed in patients with Cystic Fibrosis (164 for the first time point, 78 for the second time point) and 60 healthy controls. Chronic infection status (with *S. aureus*, *P. aeruginosa* and *A. fumigatus*) and parameters characterizing disease severity (e.g. lung function, Body Mass Index (BMI), presence of diabetes and pancreatic insufficiency) were assessed and correlated with Interleukin-7 serum levels.

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What did you find?

We found significantly higher Interleukin-7 serum concentrations in patients with Cystic Fibrosis as compared to healthy controls. There was no direct association of chronic infections with Interleukin-7 concentrations. Comprehensive analysis of potentially important clinical factors revealed poor lung function of CF patients that was associated with higher Interleukin-7 serum concentrations. These results were confirmed in time course analyses after one year, here Interleukin-7 serum levels increased significantly whereas lung function parameters, respectively.

What does this mean and reasons for caution?

Higher Interleukin-7 serum levels in patients with Cystic Fibrosis are associated with impaired lung function in Cystic Fibrosis disease progression. Therefore, Interleukin-7 levels in blood may indicate impaired immune responses in Cystic Fibrosis. The clinical relevance of using Interleukin-7 blood levels as a marker for either efficient or impaired immunity in CF has yet to be proven.

What's next?

Functional immune cell assays have to be performed to investigate a possible connection between high Interleukin-7 blood levels and non-effective immune responses in patients with Cystic Fibrosis. Long-term follow-up studies may address the question of utilising Interleukin-7 blood levels as an early marker to predict the course of pulmonary disease progression in individual CF patients.

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