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Respiratory Function Conditioned By Inflammation Markers And Genetic Profile

 Main Category: [Respiratory / Asthma](#)
 Article Date: 30 Jun 2008 - 2:00 PDT

There are close links between blood inflammatory markers, such as C-reactive protein (CRP), and respiratory function. So reveals a study to be published in the forthcoming issue of the *European Respiratory Journal* (ERJ), the peer-reviewed publication of the European Respiratory Society (ERS).

This original research by an international team provides additional support for the idea that chronic obstructive pulmonary disease (COPD) is not limited to the lungs, and is a more systemic condition.

The results of the ERJ study also suggest that signs of systemic inflammation may precede a deterioration in respiratory parameters, which could have implications for the treatment of this type of pathology.

While local inflammatory phenomena have been widely described in connection with airway conditions, data on links between systemic inflammation processes and respiratory parameters are rare.

To clarify such possible interactions, an international team headed by Jordi Sunyer (Municipal Institute of Medical Research, IMIM, Barcelona, Spain) undertook this groundbreaking study, which also takes into account genetic polymorphisms coding for the principal inflammatory markers. The team worked with colleagues based in Italy, Germany and Finland.

CRP's key role

For this original study, the researchers selected 134 myocardial infarction survivors, who were participants in the multicentre AIRGENE study. The 134 volunteers, recruited an average of 2.7 years after their last heart attack, were examined six times at four-week intervals.

Each time they examined the subjects, the researchers carried out a full set of tests for inflammation, measuring CRP, interleukin-6 and fibrinogen. They also conducted genotyping of the 36 polymorphisms of coding genes for these three inflammatory markers. In parallel, respiratory function was explored using spirometric testing.

As a result, the authors of the ERJ article were able to clearly observe an inverse correlation between blood levels of CRP and interleukin-6 on the one hand, and respiratory volume on the other. When other parameters were taken into account, this correlation was found to be independent of smoking and factors connected with the severity of the cardiac condition.

On studying the subjects' genetic profiles, Sunyer also observed that certain (rare) variants of the CRP gene (polymorphism rs1205 and haplotype 2) were associated with better respiratory parameters at spirometric testing.

The study's authors note that these two variants had been linked to a low CRP level in previous studies. "This suggests that heritability of lung function, like basal CRP level, is partially controlled by the CRP gene," they explain.

COPD: a systemic condition?

No link was found, however, between the interleukin-6 gene and spirometric data. Respiratory function was also found to be independent of serum levels of fibrinogen and its coding gene polymorphism.

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This research thus provides support for the increasingly popular idea that COPD, which includes chronic bronchitis and emphysema, amongst others, is a systemic condition and not only a respiratory disease. If confirmed, this theory could have major practical consequences for the treatment of COPD.

The results published in the forthcoming issue of the *ERJ* also suggest that signs of systemic inflammation could precede a deterioration of respiratory parameters, which could be a useful warning signal.

Sunyer remains cautious, however, pointing to the limitations of his work: the small subject group makes it more difficult to provide incontrovertible evidence of the role of a genotype variant.

Furthermore, the nature of the population studied (myocardial infarction survivors) may explain the lack of associations between respiratory function and fibrinogen, since most of the patients were taking statins, which are known to reduce fibrinogen levels.

This is a preliminary study, Sunyer emphasises, and needs to be confirmed by other research before its conclusions can be generalised.

Title Of The Original Article

Systemic inflammation, genetic susceptibility and lung function

The *European Respiratory Journal* is the peer-reviewed scientific publication of the European Respiratory Society (more than 8,000 specialists in lung diseases and respiratory medicine in Europe, the United States and Australia).

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