Discovery suggests protein may play a role in severe asthma

November 14 2007

A protein measured in a simple blood test may be a new biomarker to identify patients with the most serious form of asthma, Yale School of Medicine researchers report today in the *New England Journal of Medicine*.

Identifying this new biomarker, YKL-40, brings investigators one step closer to a treatment for the nation's 2.5 million asthmatics with a severe form of the disease that is difficult to treat, the researchers say.

The studies were done in collaboration with investigators in Wisconsin, France, and at MedImmune Inc.

Asthma is a chronic disease of the lung that affects more than 30 million Americans, among them nine million children. It is characterized by chronic inflammation and structural changes in the airways—symptoms that are severe in some patients and mild in others. Investigators are trying to find ways to control the inflammation and to understand the variation in severity.

The researchers evaluated serum levels of YKL-40 in 253 adults patients in three asthma and control groups at Yale, the University of Wisconsin, and the University of Paris. The found increased circulating serum levels of YKL-40 in patients with asthma compared to those without disease. In addition, blood levels of YKL-40 correlated with asthma severity, lung function, and thickness of the patients' bronchial wall.

“The results demonstrate that YKL-40 is significantly elevated in severe asthma,” said Geoffrey Chupp, M.D., associate professor of medicine at Yale and the lead author on the study. “Having a blood test to characterize asthmatics will be useful in pursuing asthma research and potentially in managing asthma.”

He said that research on the biology of YKL-40 should be incorporated into investigations on the pathogenesis of asthma, and additional studies are needed to define the potential role of a YKL-40 blood test in asthma management.

Jack Elias, M.D., professor and chair of medicine, professor of immunobiology, and senior author of the study, said the findings are among the first to define a parameter for asthma that can be assessed with a blood test.

“This may allow us to identify a subpopulation of patients with severe asthma and give us insights into the biologic processes that make the disease so severe in these individuals,” Elias said. “Our studies also have demonstrated that eliminating YKL-40 decreases specific types of tissue inflammation—which could be of particular benefit to asthmatic patients with an elevated level of this protein.”

Source: Yale University