

C-REACTIVE PROTEIN—What's All The Hype About?

During the last ten years, compelling experimental and clinical evidence has demonstrated that both systemic and local inflammation might play a prominent role in the cause of atherosclerosis (clogging of arteries) and its clinical complications. Because these processes accompany all stages of atherogenesis, measurement of plasma concentrations of these inflammatory markers might aid in identifying those individuals at high risk for coronary artery disease. In particular, they may add to the predictive value to improve the assessment of future global cardiovascular risk.

Among the numerous circulating biomarkers of inflammation, C-reactive protein (CRP), is an acute phase reactant with a short half life of approximately 19 hours. More than 25 studies published during the last 10 years have provided strong evidence that C-reactive protein predicts cardiovascular risk in various scenarios, not only in initially healthy subjects, but in those who manifest atherosclerosis. This blood protein, which only a short time ago was thought to be by many more important than cholesterol, is now regarded as just a risk factor for cardiovascular disease. This substance, C-reactive protein, is unquestionably associated with heart disease in that the more C-reactive protein in a person's blood, the greater the likelihood of heart disease.

In early July 2009, a study published in *The Journal of the American Medical Association* analyzed data from approximately 100,000 people and concluded that their study argues against the notion that the protein causes heart disease. The idea that if indeed an elevated C-reactive protein causes heart disease, wouldn't lowering it protect people? Well, this is not the case. Lowering C-reactive protein does not protect people from the development of cardiovascular disease. There was much confusion last year after the findings of the Jupiter Study were released because many people believe that C-reactive protein caused heart disease and those patients who had low cholesterol but high C-reactive protein had fewer heart attacks if they took the statin Crestor. Statins also have the effect of lower C-reactive protein. Could this mean that lowering C-reactive protein could prevent heart disease? It may; however, what has been proven time and time again is that cholesterol-lowering was protective.

Despite multiple attempts to develop drugs to lower C-reactive protein, many experts now feel that it is time to abandon that search. One of the proponents of using C-reactive protein happens to be Dr. Paul Ridker of Brigham and Women's Hospital. He was the author of the Jupiter Study and said the findings of the study did not change anything for him. It is pretty ironic that he invented the laboratory test for highly specific C-reactive protein and who profits from its use. There was a study also done in London with 35 co-authors who developed a technique that allows one to get answers quickly about causality. In other words, it is their thought that white blood cells invade artery walls releasing damaging chemicals leading to plaque formation. The study showed that in a population, there are people who just happen to produce more C-reactive protein throughout their lives and others who just happen to produce less. If indeed C-reactive protein causes heart disease, those who make more would have more heart disease. The study did not find this. There was absolutely no association between CRP and heart disease rate. So, in other words, the association between C-reactive protein and heart disease must reflect something else. C-reactive protein is thus just a marker of inflammation.

While I do have multiple patients who come in asking for C-reactive protein to be drawn, after gentle reassurance that with the exception of being performed in select populations, I feel it should not be done routinely as there are many other markers of increased risk. Indeed, C-reactive protein can be elevated due to other causes of inflammation, leading to falsely elevated results.