

hs-CRP (HighSensitivity C-Reactive Protein)

What is hs-CRP?

hs-CRP is a protein that is manufactured in response to inflammation in the body. Since it is an acute phase protein, levels of hs-CRP will rise dramatically when a specific injury or infection exists, regardless of where in the body the damage occurs. Levels of hs-CRP increase simultaneously when inflammatory enzymes such as IL-6 (interleukin-6) are present.

Why measure hs-CRP?

Elevated CRP is indicative of systemic (whole body) inflammation, which includes vascular inflammation, a known cause of heart disease. Extensive literature shows that elevated CRP is very predictive of cardiovascular risk. In fact, in the large Physician's Health Study, CRP was one of only two risk factors that demonstrated statistically significant trends with sudden cardiac death after controlling for age and smoking. (The other was the omega 3 index.)

It should be noted that although CRP is very predictive of heart disease risk, it is not specific to vascular inflammation. In other words, if acute inflammation exists from injury or infection, for example, CRP values will rise, even when cardiovascular inflammation is not present. However, when CRP remains chronically high in the absence of acute causes, cardiovascular disease should be considered.

Interestingly, evidence suggests that CRP is particularly relevant in predicting cardiovascular events in asymptomatic people with no known heart disease. Therefore, in the absence of more traditional cardiovascular risk factors such as smoking and hypertension, it can be used to re-classify "intermediate risk" people into more appropriate risk categories – either higher or lower depending on hs-CRP levels.

Only the high sensitivity CRP assay will detect low levels of chronic inflammation associated with heart disease. Hs-CRP levels should be less than 3.0 mg/L.

Why is hs-CRP harmful?

hs-CRP is a marker, not necessarily a cause, of inflammation, so the protein itself is not directly harmful. Rather CRP is indicative that low-grade inflammation exists and should be treated. Since cardiovascular disease is considered a disease of inflammation – vascular injury, damage from oxidative stress and abnormalities in lipoprotein metabolism – chronically elevated levels of hs-CRP are dangerous. In addition, abdominal obesity and insulin resistance are strong predictors of hs-CRP. Elevated CRP is also linked with peripheral arterial disease, stroke and endothelial dysfunction (blood vessels do not respond appropriately to signals for dilation and constriction).

How is hs-CRP treated?

Reducing whole-body inflammation is the key to hs-CRP. Lifestyle changes can effectively lower hs-CRP (smoking cessation, weight loss and exercise). Pharmacological intervention includes the use of statins, which reduce hs-CRP levels independent of their low-density lipoprotein lowering effects.

References

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Additional references at <http://www.spectracell.com/online-library-lpp-crp-abstract>