Follow the Chisum Fitness Trail – Vascular Inflammation

RE: Vascular Inflammation and CV Risk

Vascular inflammation refers to either a chronic or acute response within the arteries and capillary beds. The research has determined a direct correlation between this inflammation and cardiovascular risk.

Quinet, Zakem, & McCain (2003. Curr Rheumatol. Rep.) reported the negative effects are similar for both localized (specific organ) or systemic vasculitis. Their data indicates this physiological response is due to the inflammation within the area.

A Dutch study, authored by deMaat & Kluft (2002. Vascul. Pharmacol.), studied 15 smokers and 15 non smokers with Coronary Artery Disease (CAD). The single common factor between the two groups was the presence of the Cytokine, Interleukin-6 (IL-6). This immune marker is associated with increased inflammation.

It is known that increases in baseline levels of C-reactive protein (CRP) have been identified as an independent factor in cardiovascular episodes. In a second published article by the two Dutch authors (Kluft & deMaat. 2002. Vascul. Pharmacol.), and a publication by McConnell (2002. Annals Rheum. Dis.) they noted the connection between inflammation and CRP. They called for the research community to study the potential for alterations within the baseline levels as both a diagnostic predictor and surrogate endpoint in the treatment module.

Virdis & Schiffrin (2003. Curr. Opin. Nephrol. Hypertens.) published an insightful article on the role inflammation has upon both hypertension and CV Disease. They agreed with Kluft and deMaat as to the potential treatment efficacy of both conditions.

Another immune marker, Leukocytes, has been associated with vascular inflammation. In a recent article by Dr. Daniel Blockmans (2003. Cleveland Clinical J. Med.), he presented the potential for radioactive labeling of Leukocytes to predict both inflammation and unsuspected sites of disease and disease activity.

The physiological response associated with inflammation and CVD is related to the increased production of both endothelins and prostaglandins. Cytokines stimulate the release of both endothelins (proteins) and prostaglandins (fat-based) molecules.

Endothelins are found in small quantities within the cardiovascular system. When concentrations increase, there is a significant restriction and hardening of the vascular beds.

Prostaglandins should be viewed as two distinct characters. Those produced by the physiological response known as COX-1, promote normal bodily function and health. Those produced by COX-2 are linked to progressive disease and inflammation. Cytokine stimulation will increase the enzyme COX-2.

Inflammation has also been linked to the increased risk for stroke. Inflammation produces a constant source of trauma to the endothelial tissue of the veins. A blood clot, or thrombus, grows at this site, and with the pulse of blood, breaks off and flows downstream.

At the separation from the venous wall, it is now known as an embolus. When it reaches a point where the wall is smaller than its outside diameter, it will prevent the blood from flowing to this area. In essence, killing the cells within the general area, or causing a stroke.

In the proceeding articles, we will explore the role diet has upon vascular inflammation.

If you have any questions, please feel free to contact me.

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