C-Reactive Protein in the Detection of Inflammation and It’s Role in Coronary Artery Disease

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1. Introduction
Heart failure is becoming more common and increasing annually with coronary artery disease (CAD) being the number one cause [1]. Current research is focused on detecting more risk factors and markers for heart disease in order to develop interventions preventing its progression. C-Reactive Protein (CRP), the most widely studied inflammatory protein, plays a role in the atherosclerotic process of vessels, which subsequently can lead to infarct [2]. However, the exact role of CRP in the acute coronary situations is not completely understood.

2. Experiments and Results
The purpose of this study was to perform a systematic evidence-based literature review from peer-reviewed articles published in accredited journals that addressed the issue of CAD and CRP. The literature review was performed using the search engine of peer-reviewed articles obtained from Medline, utilizing certain, specific key terms, including C-reactive protein, coronary artery disease, inflammation, atherosclerosis, vessel injury, marker, history, and underlying cause. Articles were selected based on their content associated with CRP and CAD; other articles used contained a variety of inflammatory markers and acute heart diseases in order to provide evidence that inflammatory markers are used to detect a variety of heart conditions such as stable and unstable angina. Articles were categorized into levels of evidence and separated into categories to answer the two main research questions: Is CRP a better marker for detection of inflammation? Is the presence of CRP associated with CAD?

Forty-eight articles matched the desired criteria and were reviewed using evidence-based methods. All forty-eight articles determined that CRP was a superior marker in the detection of inflammation. Twenty-four articles correlated CRP with CAD along with other mediated factors of vessel disease, with most being level-one evidence [Figure 1].

3. Discussion, Significance, and Conclusions
Due to the relevance of CRP in acute coronary situations, it has been demonstrated on many occasions where CRP is elevated in other acute situations, such as hypercholesterolemia [2], muscle injury [3], infection [4], myocardial infarction (MI) [5], hypertension [6], and diabetes [7]. It is apparent that CRP plays a role in acute coronary syndrome, yet its specificity is not significant like troponin I, which is specific for MI. Therefore, CRP is a superior marker of inflammation and plays an important role in the development of CAD [8]. However, its role in the development of CAD is currently still under investigation.

C-Reactive Protein: It’s Role as a Marker in the Detection of Inflammation and it’s Association with Coronary Artery Disease.

MESH Terms: C-Reactive Protein (CRP), Coronary Artery Disease (CAD), Inflammation,

Total Number of Articles; n=48

Marker for Inflammation; n=48

Underlying Cause of Coronary Artery Disease; n=24

Results: C-Reactive Protein is a Marker of Inflammation; n=52 (4 articles having 2 group classifications)

Results: The presence of C-Reactive Protein is Associated with Coronary Artery Disease; n=26 (2 articles having 2 group classifications)

Outcome: C-Reactive Protein is a Marker of Inflammation and Associated with Coronary Artery Disease; n=24 Articles

KEY:

Group Classifications

Group 1: random, control
Group 2: retrospective/prospective cohort
Group 3: case control
Group 4: cross sectional
Group 5: background information
Group 6: not specified in article