The Role of Anticardiolipin Antibodies In Angina Pectoris Patients

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Abstract:


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The commonest symptom of coronary heart disease is angina. Angina Pectoris is recurring acute chest pain or discomfort resulting from decreased blood supply to the heart muscle (myocardial ischemia). Angina occurs when the heart’s need for oxygen increases beyond the level of oxygen available from the blood nourishing the heart. Cardiovascular disease (CVD) has emerged as the dominant chronic disease in many parts of the world, and early in the 21st century it is predicted to become the main cause of disability and death worldwide.

Many factors play a role in unstable angina. Among these could be the (ACL) which may act in the induction of immunological response leading to development of unstable angina. Immuno-inflammatory activity mediated by different antibodies could have a role in the unstable angina.

This study enrolled 60 patients who were diagnosed to have unstable angina. Patients control group enrolled 30 subjects who had have stable angina. The third group composed of 20 healthy controls.

Using indirect ELISA technique the following test was done:
Detection of antibodies in the sera of the three study groups for ACL.
In this study there is higher prevalence of ACL antibody in unstable angina patients group as compared to both stable angina and healthy control groups (53%, 20%, and 10%).
CONCLUSION: Anticardiolipin antibodies can be considered as an additional coronary risk factor.

Introduction and historical review: Angina is the commonest symptom of coronary heart disease. It is defined as recurring acute chest pain or discomfort resulting from decreased blood supply to the heart muscle (myocardial ischemia). It occurs when the heart’s need for oxygen increases beyond the level of oxygen available from the blood nourishing the heart. Generally speaking the symptoms of angina include mild or severe pain, pressure, or discomfort in the chest, the pain is generally described as a feeling of a squeezing, strangle, heaviness, or suffocation sensation in the chest - brought on by exertion and relieved by rest.

Over the past two centuries, the industrial and Technological Revolutions and their associated economic and social transformations have resulted in dramatic shifts in the diseases responsible for illness and death. Cardiovascular disease (CVD) has emerged as the dominant chronic disease in many parts of the world, and early in the 21st century it is predicted to become the main cause of disability and death worldwide.

Types Of Angina

Stable Angina: Most reports agreed that stable angina is a repeating pattern of chest pain which has not changed in character, frequency, intensity or duration for several weeks.
Prinzmetal's Angina: Prinzmetal’s or variant angina is caused by a vasospasm, a spasm that narrows the coronary artery and lessens the blood flow to the heart.
Microvascular Angina: This condition results from poor functioning of the tiny blood vessels that nourish the heart, arms and legs.
Unstable Angina: Unstable angina is chest pain that is variable, either increasing in frequency or intensity and with irregular timing or duration. Unlike stable angina, unstable angina does not appear gradually, it first appears as a severe episode.(2) Many factors play a role in unstable angina. Among these could be the (ACL, APL, ANCA, & anti-dsDNA) which may act in the induction of immunological response leading to development of unstable angina. Immuno-inflammatory activity mediated by different antibodies could have a role in the unstable angina.

Anticardiolipin (aCL) antibodies An antibody directed against cardiolipin. Anticardiolipin (aCL) antibodies are one of the antiphospholipid group of antibodies that associated with the antiphospholipid syndrome.(8,9) ACL antibodies are strongly associated with venous and arterial thrombosis, both in patients with systemic lupus erythematosus (SLE) and in patients without any apparent autoimmune diseases.(10-12) Much evidence has been reported that such antibodies related with thromboembolic manifestations;(13-15) such as cerebral or myocardial infaractions, pulmonary embolism, deep venous thrombosis, intrauterine fetal death due to placental infaraction, neurological defects and thrombocytopenia.(16-19) An association of ACL antibodies with coronary artery disease has been shown in several but not all studies.(20,21)

Patients and methods:
This study enrolled 60 patients who were diagnosed to have unstable angina compared with 30 subjects who had have stable angina and 20 healthy controls.

In a normal range study with serum samples from healthy blood donors the following ranges have been established with Anti-Cardiolipin tests:
Anticardiolipin screen [U/ml]
Cut-off:10
The results were interpreted as follows:
Patient samples with optical density value greater than or equal to cut off value was considered positive for Anti-Cardiolipin (IgG,IgM,and IgA) where as optical density value less than this cut off was considered negative for Anti-Cardiolipin (IgG, IgM, and IgA).

Results:
This study showed that there was a higher prevalence of ACL antibody in unstable angina patients group as compared to both stable angina and healthy control groups (53%, 20%, and 10%) with a statistically significant P value (unstable angina X stable angina P=0.026) as shown in table 1,table 2 and figure 1.

Table (1): Seroprevalence of ACL antibodies:

<table>
<thead>
<tr>
<th>Conc. of ACL (U/ml)</th>
<th>Unstable angina</th>
<th>Stable angina</th>
<th>Healthy control</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO. of patients (60)</td>
<td>%</td>
<td>NO. of controls (30)</td>
<td>%</td>
</tr>
</tbody>
</table>

432
<table>
<thead>
<tr>
<th>&gt;10</th>
<th>32</th>
<th>53.33</th>
<th>6</th>
<th>20</th>
<th>2</th>
<th>10</th>
</tr>
</thead>
</table>

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Table (2): Mean concentrations of Seroprevalence of ACL antibodies:

<table>
<thead>
<tr>
<th></th>
<th>Unstable angina</th>
<th>Stable angina</th>
<th>Healthy control</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>60</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Mean</td>
<td>15.91</td>
<td>8.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>13.93</td>
<td>5.51</td>
<td>5.77</td>
</tr>
</tbody>
</table>

Patient x control P value 0.016  
Patient x healthy P value 0.026  
Control x healthy P value >0.05 NS

Discussion:
In this study we found that there is higher prevalence of ACL antibody in unstable angina patients group as compared to both stable angina and healthy control group (53%, 20%, and 10%) with a statistically significant P value (unstable angina X stable angina P=0.016, unstable angina X healthy group P=0.026).
Our results showed high prevalence of ACL in angina patients group which reflect an inflammatory process might playing a role in the pathogenesis of this disease, this is comparable to other workers who reported similar results.
This finding is in consistence with Levy PJ et al(6) who showed that the prevalence of ACL is increased with premature atherosclerosis reaching up to 11% and Taylor LM et al who showed that about 26% of general populations who were submitted to vascular surgery had positive ACL.(7)

We observed that about 10% of healthy control group had positive ACL and this is in agreement with Schved JF et al who reported the same finding.(5)

Yet Phadke KV et al reported that ACL had no essential role in ischemic heart diseases (21), hence more work need to investigated about the role.

Conclusion:
Anticardiolipin antibodies could be independent risk factor for ischemic patients i.e. anticardiolipin antibodies may be consider as an additional coronary risk factor.

Reference:


