Short Communication

The seroepidemiology of the chronic infections in patients with myocardial infarction in North of Iran

Hadi Bazzazi*a, Ezzat Allah Ghaemib, Mohammad Ali Ramezani*c

Abstract

BACKGROUND: Recent studies have suggested that chronic infections with Chlamydia pneumoniae (Cpn) and Helicobacter pylori (Hp) may be associated with the risk of Myocardial Infarction (MI).

METHODS: A cross sectional study was conducted on 140 citizens. Seroprevalence was assessed by ELISA tests measuring IgA and IgG antibodies to Cpn and Hp in sera.

RESULTS: Among patients, %11.4 and %90.0 were seropositive for Anti-Cpn IgA and IgG respectively, and also %51.4 and %58.6 were seropositive for Anti-Hp IgA and IgG respectively.

CONCLUSIONS: The present study shows that previous infection to Cpn in patients with MI is important. But there are no significant association between infection with Hp and MI.

KEYWORDS: Myocardial Infarction, Helicobacter Pylori, Chlamydiae Pneumoniae, IgA, IgG.
kinase to twice the upper limit of normal for at
least two times and characteristic electrocardi-
ography changes in the ST segment. Those
who had no definite typical electrocardiogra-
phy changes were served as controls (n = 70,
mean age of 53.7 years). IgG and IgA antibod-
ies against Cpn and Hp were tested using
ELISA according to manufacturer’s instruc-
tions. The results were determined by calculat-
ing an index value from optical density values
relative to control materials. Seropositivity was
defined as the presence of either IgG or IgA
antibodies. Collected data were analyzed with
the Epi-Info statistical software (CDC-USA)
and statistical significant difference was as-
essed by Fisher exact test and Chi-square test.
P value < 0.05 was considered significant.

Results
Each group (Patients and Controls) consisted
of 22 (39.4%) female and 48 (68.6%) male sam-
ple. Age and sex difference between patients
and the controls was not statistically signifi-
cant (p > 0.05). Table 1 shows the frequency of
anti-Cpn and Anti-Hp antibodies in serum of
patient and control groups. Table 2 shows the
frequency of anti-Chlamydia pneumoniae IgG
and IgA isotypes in serum of patient and con-
trol groups. Table 2 also shows the frequency
of anti-Helicobacter pylori IgG and IgA iso-
types in serum of patient and control groups.

Discussion
According to the results of this study, the high
prevalence of IgG in cases and in controls
demonstrates that prevalence of previous in-
fec tion with Cpn in our region is high. A pos-
sible reason for the high prevalence may be
that the study population was old. In this
study, an association between IgG isotype to
Cpn and prevalence of MI was observed. This
fact suggests that previous infection to Cpn in
patients with MI is important. This result is in
agreement with a number of seroepidemi-
ological studies.9,10 Additionally, as shown in
table 2, occurrence of IgG without IgA in se-
rum, have case-control significance differences.
Existence of IgG in the absence of IgA to Cpn
may be considered as a sign of past infection
while in reinfection the IgA response is pre-
dominant.11 Prevalence of IgA class of Anti-
Cpn in cases and in controls shows that acute
infection is not infrequent in this area as well.
On the other hand, frequency in control popu-
lation was significantly greater than cases, in
condition that nothing of IgG and IgA to Cpn

Table 1. Frequency of anti-Cpn and Anti-Hp antibodies in serum of patient and control groups

<table>
<thead>
<tr>
<th>Antibody</th>
<th>Study Group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patient n (%)</td>
<td>Control n (%)</td>
</tr>
<tr>
<td>Anti-Cpn IgG</td>
<td>63 (%90.0)</td>
<td>54 (%77.1)</td>
</tr>
<tr>
<td>Anti-Cpn IgA</td>
<td>8 (%11.4)</td>
<td>14 (%20.0)</td>
</tr>
<tr>
<td>Anti-Hp IgG</td>
<td>41 (%58.6)</td>
<td>41 (%58.6)</td>
</tr>
<tr>
<td>Anti-Hp IgA</td>
<td>36 (%51.4)</td>
<td>24 (%34.3)</td>
</tr>
</tbody>
</table>

Table 2. Frequency of IgG and IgA isotypes of anti-Chlamydia pneumoniae and anti-Helicobacter
pylori in serum of patient and control groups

<table>
<thead>
<tr>
<th>IgG in serum</th>
<th>IgA in serum</th>
<th>Anti-Cpn percent in control (n)</th>
<th>Anti-Cpn percent in patient (n)</th>
<th>Anti-Hp percent in control (n)</th>
<th>Anti-Hp percent in patient (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td>18.6% (13)</td>
<td>11.4% (8)</td>
<td>20.0% (14)</td>
<td>41.4% (29)***</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>58.6% (41)</td>
<td>78.6% (55) *</td>
<td>38.6% (27)</td>
<td>17.1% (12) ****</td>
</tr>
<tr>
<td>-</td>
<td>+</td>
<td>1.4% (1)</td>
<td>0.0% (0)</td>
<td>14.3% (10)</td>
<td>10.0% (7)</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>21.4% (15)</td>
<td>10.0% (7) **</td>
<td>27.1% (19)</td>
<td>31.4% (22)</td>
</tr>
</tbody>
</table>

* < 0.005; ** < 0.03; *** < 0.003; **** < 0.002
in sera is detected. It is indicated that in people who have not an evidence of infection with Cpn, possibility of the MI incidence would be reduced. The studies of relation between Cpn and heart disease have created diverse results in spite of whether IgG or IgA was measured. The basis for the inconsistency is unidentified, but various explanations have been suggested incl udes differences in techniques, titer limits, study populations, and the used sampling time.

On the basis of serpositivity to entire Anti-Hp IgG and IgA isotypes, population can be separated to infect with Hp and healthy groups. As indicated in table 2, %68.57 of patients and %69.86 of controls are seropositive to total anti-Hp specific IgA and IgG isotypes and so it seems that frequency of infection in two groups is comparable. Furthermore, as shown in table 1, there was no important difference in frequency of whole anti-Hp IgG antibodies between patients and controls. The present findings agree with the results of some of the previous studies that found no significant association between infection with Hp as evidenced by elevated antibodies to Hp and acute myocardial infarction. But a number of other studies have reported more prevalence of anti-Hp antibodies in serum of patient with ACS in comparing to controls.

Conclusions
The present findings show that previous infection to Cpn in patients with MI is important. But there are no significant association between infection with Hp as evidenced by elevated antibodies to Hp and MI.

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Conflict of Interests
Authors have no conflict of interests.

Authors' Contributions
HB designed and conducted the study. He also participated in laboratory experiments. He carried out statistical analyses and prepared the manuscript. EAG provided essential technical support of the study. MAR provided assistance in the design of the study and participated in clinical experiments. All authors have read and approved the content of the manuscript.

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