LETTER TO THE EDITOR
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Role of Chlamydia pneumoniae Infection in Asthma in Northeast of Iran

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ABSTRACT

The role of Chlamydia pneumoniae in asthma has drawn much attention in recent years. In this study we assessed the prevalence of C. pneumoniae infections in patients with chronic stable and acute exacerbation of asthma and compared it with normal population. Twenty adult patients with chronic stable asthma and 21 patients with acute exacerbations of asthma and 41 matched control subjects were studied for presence of C. pneumoniae using cell culture. This study suggests that positive results of C. pneumoniae culture are associated with both chronic stable and acute exacerbation of asthma. It could be concluded that C. pneumoniae is a risk factor for either development or exacerbation of asthma.

Key words: Asthma; Chlamydia pneumoniae; Culture

LETTER

The worldwide high prevalence of asthma and the impact of the disease on quality of life, have led to numerous investigations on the cause of this disease. Recently Chlamydial infection has been suggested to participate in the pathophysiology of asthma.¹,² Considering conflicting data about frequency of C. pneumonia in asthmatic subjects and, regarding that no such study has been done in Middle East, we assessed the prevalence of C. pneumoniae infections in well defined patients with chronic stable and acute exacerbation of asthma and compared it with general population.

Culture was used to study the role of Chlamydia pneumonia in asthma among 21 patients whom were admitted as asthma exacerbation and 20 patients with chronic stable asthma in Mashhad University of Medical Sciences, Iran during Feb. 2005 to May 2005. Pair matched healthy control subjects were also chosen for each of these groups. All subjects were examined by the physician and routine questionnaire were completed. Nasopharyngeal epithelial cells, which were obtained with a swab, were used for culture. Specimens were inoculated into cycloheximide-treated monolayers of McCoy cells in tissue culture vessels within 1 h of collection. A positive cell culture was defined when any specimen yielded one or more fluorescent-antibody-stained inclusions in either the primary or the second passage. For increasing reliability, all processes were performed blind. In this study the differences between groups were determined using the Chi square test (SPSS 11.5). For all analyses the level of significance was defined as a P value of 0.05 or less.

Among two asthma groups 47.6% and 35% had positive culture results while about 14.3% and 5% of control subjects had positive results. P-value was statistically significant in asthmatic exacerbation patients (Table 1). The same has been true about the chronic stable asthma group in comparison with its control group (Table 1).

In confirming the cause and effect relationship between C. pneumoniae and asthma three conditions should be met: (a) higher frequency of C. pneumoniae in asthmatic patients in comparison with control subjects, (b) the presence of C. pneumoniae and it’s quantity, must be related to the severity of disease and (c) successful eradication of C. pneumoniae, should be accompanied with clinical improvement. While for C. pneumoniae neither of these conditions has been met consistently. In this study we assessed the first condition in both exacerbation and chronic stable asthma. Its also worth mentioning that, we did not consider severity of asthma in evaluating C. pneumoniae infection rate, while some authors studied C. pneumoniae role in severe asthma,³⁶ thus we are not to question or discredit the relationship between C. pneumoniae and severe asthma pathogenesis.

While many studies raised question about possible association of C. pneumoniae seroprevalence and asthma pathogenesis³⁷ and even some like Brouard et al³⁸ discredit any association between C. pneumoniae and asthma exacerbation, our study like many other studies found a significant relationship between asthma and this microorganism.³⁹,⁴⁰

More over Araafa et al⁴⁰ found C. pneumoniae is related with more severe forms of asthma.

In conclusion, considering significant difference of C. pneumoniae infection rates, among asthmatic patients with control subjects and also, regarding high C. pneumoniae infection rate in case groups, we deduced that C. pneumoniae is a contributing factor in asthma pathogenesis, therefore eradication may be beneficial in asthmatic patients.

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Table 1. The result of tests among cases and their control group.

<table>
<thead>
<tr>
<th></th>
<th>Mean age (years)</th>
<th>Sex (M/F)</th>
<th>Number of positive result (percent)*</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma exacerbation</td>
<td>44.42±14</td>
<td>8/13</td>
<td>10 (47.6%)</td>
<td>0.019</td>
</tr>
<tr>
<td>Control group for asthma exacerbation</td>
<td>44.42±14</td>
<td>8/13</td>
<td>3 (14.3%)</td>
<td></td>
</tr>
<tr>
<td>Chronic stable asthma</td>
<td>42.00±17</td>
<td>7/13</td>
<td>7 (35%)</td>
<td>0.01</td>
</tr>
<tr>
<td>Control group for chronic stable asthma</td>
<td>42.00±17</td>
<td>7/13</td>
<td>1 (5%)</td>
<td></td>
</tr>
</tbody>
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REFERENCES