**Helicobacter Pylori Infection Reduces the Risk of Esophageal Squamous Cell Carcinoma: A Case-Control Study in Iran**

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**Abstract**

**Background:** Some studies have indicated a protective role of *H. pylori* against risk of esophageal squamous cell carcinoma (ESCC). The purpose of this study was to explore this possible relationship in a case-control study. **Methods:** One hundred consecutive patients diagnosed with ESCC and 100 healthy people were entered with informed consent. All were asked to provide a blood sample and serum immunoglobulin G (IgG) antibodies against HP-CSAs were measured with an enzyme-linked immunosorbent assay (ELISA). **Results:** There was significant reverse association between *H. pylori* positivity and tumour development (OR=0.28, 95% CI: 0.15-0.54), but not with a Cag A positive status. **Conclusion:** Our findings provide further evidence that *H. pylori* infection decreases the risk of ESCC but that this is not linked to a Cag A positive status.

**Keywords:** Esophageal squamous cell carcinoma - H pylori - Cag A status - case-control study - Iran

**Materials and Methods**

One hundred consecutive patients who diagnosed with esophageal squamous cell carcinoma (referral from Imam Reza hospital and Sina hospital in Tabriz, Iran) (Khoshbaten et al., 2010) and one hundred healthy people as controls (from same hospitals and matched by age and sex) entered to this study. Those control subjects with any clinical evidence of gastrointestinal symptoms which had related to *H. pylori* or esophageal reflux disease were excluded from the analysis. Written informed consent was obtained from all patients and controls before their examinations. Subjects were asked to provide a blood sample, which was drawn from case patients during the initial hospital stay and from control subjects. After centrifugation, all serum samples serum immunoglobulin G (IgG) antibodies against HP-CSAs were measured with an enzyme-linked immunosorbent assay (ELISA, PatanTeb, Iran).

**Results**

The total of 100 patients (64 men, 36 women) and 100 health controls (66 men, 34 women) included in this study. The mean±SD of age for patients was 63.9±9.89 year and for controls was 61.3±11.7. There was no statistically difference between case and control’s age (P=0.1) and sex (P=0.76).

The mean titre of HP IgG in ESCC patients was 41.2±36.95 and in controls was 56.2±29.5 and there was a statistically difference between case and control (P=0.002).
Table 1. HP IgG and Cag A Levels in Patients with ESCC and Control Subjects

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Controls</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>64.5±9.74</td>
<td>63.7±10.2</td>
<td>61.1±11.7</td>
</tr>
<tr>
<td>HP IgG</td>
<td>43.3±37.5</td>
<td>37.7±36.0</td>
<td>50.2±31.3</td>
</tr>
<tr>
<td>Cag A</td>
<td>22.6±31.1</td>
<td>23.3±29.9</td>
<td>25.9±35.5</td>
</tr>
</tbody>
</table>

Table 2. The Number of HP Positive and Cag A Positive Cases and Controls

<table>
<thead>
<tr>
<th></th>
<th>Case</th>
<th>Control</th>
<th>OR</th>
<th>95% CI</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP</td>
<td>58</td>
<td>42</td>
<td>83</td>
<td>17</td>
<td>0.28</td>
</tr>
<tr>
<td>Cag A</td>
<td>28</td>
<td>72</td>
<td>36</td>
<td>64</td>
<td>0.69</td>
</tr>
</tbody>
</table>

The results of mean levels for HP IgG and Cag A according to sex group was appeared in Table 1 and for HP positive and Cag A positive in Table 2, indicating a reverse association between HP infection and risk of ESCC (OR=0.28) but not a Cag A positive status.

Discussion

In this study, HP infection was strongly associated with a reduced risk of ESCC. Our study is in contrast to a study by Ye et al (2004) who found an inverse association between H. pylori infection and the risk of esophageal adenocarcinoma and indicating that patients with Cag A serum antibodies had a statistically significantly increased risk of esophageal squamous-cell carcinoma.

The association of H. pylori and ESCC is still in debate, some studies showed the increased risk of Hp infection on ESCC (Ye et al., 2004; Wang et al., 2006), whereas others did not find a significant association (Kamangar et al., 2007; Siman et al., 2007) and a meta analysis showed an inverse statistically significant relationship of H. pylori infection with both esophageal adenocarcinoma and Barrett’s esophagus, but not statistically significant relationship with squamous cell carcinoma (Rokkas et al., 2007).

A hypothesis postulates that the apparent protection associated with H. pylori infection is mediated via gastric atrophy and a reduced load of esophageal acid (Richter et al., 1998) and this hypothesis supported by some cross-sectional studies (Raghunath et al., 2003). Besides, a recent study provides indirect evidence of the inverse association between Hp infection and ESCC risk, which is possibly due to Hp-induced apoptosis in ESCC cells (Wu et al., 2009).

Our findings suggested that H. Pylori infection decreases the risk of ESCC but no statistically association between Cag A positive and risk of ESCC was found. Further study with higher sample size is necessary to confirm the rule of H. pylori in reducing the risk of ESCC.

References


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