ABSTRACT

Objective: Our current research aimed to see if there was a link between Helicobacter pylori infection and thyroid hormone levels.

Methods: In Karbala, Iraq, samples were obtained from 84 individuals with H. pylori (42 patients tested positive for H. pylori antigen test and 42 patients tested negative) between December 2021 and January 2022. All subjects had five milliliters of whole blood drawn into clot tubes and centrifuged for 30 minutes to obtain serum. Enzyme-linked immunosorbent assay (ELISA) kits were used to measure the amounts of free T4 and TSH in the blood.

Results: Females are more susceptible to H. pylori infection than males (p = 0.00001), according to the findings. Furthermore, the mean age of positive test patients is 49.66 years, which is considerably (p = 0.0177) higher than the mean age of negative test patients (43.38 years), and the oldest men are more infected with H. pylori than young men. The results show no significant variations in free T4 concentrations between males and females for both positive and negative tests (p > 0.05). This implies that while infected with H. pylori, the concentration of free T4 was unaffected. Finally, H. pylori infection causes a considerable increase in stomach acid, according to the research. (p = 0.0037) in FSH levels in both sexes.

Conclusions: We can determine that females are more likely than males to be infected with H. pylori. And that most patients are aged, particularly men. Furthermore, there is no partnership between H. pylori infection and free F4 hormone levels, and patients with H. pylori have a higher FSH hormone concentration than those with a negative H. pylori antigen test.

Keywords: freeT4, FSH, H. pylori, Kerbala.

INTRODUCTION

Helicobacter pylori is a gram-negative circle pathogenic bacteria that commonly infects and destroys the stomach's mucosa. H. pylori infections can cause chronic gastritis, peptic ulcers, and stomach cancer, among other things. Extragastric illnesses can also be caused by H. pylori infection. According to preliminary findings, Extragastric diseases like as prediabetes have been linked to H. pylori infection. According to preliminary findings, Extragastric diseases like as prediabetes have been linked to H. pylori infection. Furthermore, several studies have found a link between autoimmune thyroid disorders (ATDs) and H. pylori infections. Indeed, research has revealed that certain bacteria and viruses can mimic the pathogenic nature of the thyroid phospholipid bilayer, a significant factor in the evolution of autoimmune diseases. As a result, autoantibodies may assault the thyroid after H. pylori infection.

In previous research, there has been some indication of a relationship between thyroid autoimmune disorders and H. pylori infection, such as Graves’ disease and Hashimoto thyroiditis. However, studies have examined the relationship between H. pylori infection and thyroid ailments, which has mostly emphasized thyroid autoimmunity. H. pylori infection was revealed to be positively linked with the risk of thyroid nodule (TN) types by Shen et al. Molecular mimicry and dysbiosis are two biological mechanisms that have been proposed to explain the link. According to molecular mimicry theory, At least 14 H. pylori antigen epitope proteins have amino acid sequences identical to those found in thyroid innate proteins. This anatomical resemblance can result in an immune cross-reaction and long-term thyroid dysfunction, which could explain why H. pylori infection causes reactive hyperplasia. Tc cells may serve other purposes in this process by co-inducing the development of TN types. Furthermore, Endocrine signals are influenced by the brain-gut axis, and TN patients’ intestinal microbiota diversity is substantially higher than the normal population. Lactobacillus, an important...
intestinal flora, has been identified to prevent oxidative stress to the thyroid gland, whereas infection with *H. pylori* reduces the bacterium’s ability to survive, which could be linked to the pathogenesis of TN types.\(^2\) Although these data suggest links and possible physiological mechanisms, large population epidemiological studies are still needed to confirm them.

Either *Helicobacter pylori* or peptic ulcer disease cause gastritis, or sometimes both. On the other hand, gastritis required higher daily dosages of T4 than healthy, implying that normal stomach acid output is essential for successful oral T4 absorption.\(^3\) Furthermore, in people were treated with T4, the formation of *H. pylori* infection led in a rise in serum thyrotropin (TSH), an influence that was almost completely reversed once *H. pylori* infection was eliminated.\(^2\)

In this study, we looked at the link between *H. pylori* infection and thyroid hormones (free T4 and TSH) in the city of Karbala.

**MATERIALS AND METHODS**

In this study, by using ELISA kits, *H. pylori* antigen (in stool) was assessed as a marker of *H. pylori* infection. Samples from 84 patients (42 patients were positive *H. pylori* antigen and 42 patients were negative *H. pylori* antigen) were obtained.

All subjects had five milliliters of whole blood drawn into clot tubes and centrifuged for 30 minutes to obtain serum. Thyroid function was assessed using ELISA kits that evaluated free T4 and TSH levels in the blood.

**RESULTS AND DISCUSSION**

*Gender:* The results in Table 1 indicate no significant difference (p > 0.05) between patients whose results appeared positive for *H. pylori* antigen test and those who tested negative for both sexes.

While there was a significant and clear increase (p = 0.00001) in the number of test-positive females compared to the number of test-positive males was found, which indicates that females are more susceptible to infection with *H. pylori* than males.

The current study’s findings were consistent with those of Yücel et al.,\(^2\) who discovered that the percentage of females was higher than that of males (76% of them were female and 24% male). Another study found a substantial link between female gender and GN, as well as a link between higher GC grade and female gender.\(^4\) Also, females had a higher prevalence of *H. pylori* infection than males.\(^5\)

On the other hand, our findings differed from those of numerous other investigations. The male gender is linked to most *H. pylori*-related disorders, gender’s role as a predictive marker for *H. pylori* infection is indeed debated. To find the actual *H. pylori* and sex have a connection, the researchers employed a meta-analysis of large, society studies where the test of conversation had been suited at least for age and socioeconomic factors, and accumulated actual data from researchers once data on sex correlations was not initiated.\(^6\)

Age: The results of Table 2 found that the average age of patients for positive test is 49.66 years, which is significantly (p = 0.0177) more than the average for patients with a negative test (43.38 years). The findings also revealed no statistically significant difference (p > 0.05) between the mean ages of males and females for both test results.

It should be noted that the average age of males whose test result was positive was 54.66 years, which is significantly higher (p = 0.0409) than the average age of males whose test result was negative (38.71 years), and this indicates that the oldest men are more infected with *H. pylori* than young men.

In contrast to our findings, one study observed that the mean age of participants with thyroid nodules was greater than that of the control group (43 and 50 years, respectively) in one study.\(^7\) Individuals under 50 years old had a substantially larger proportion of *H. pylori* positive + CAP than those over 50 years old (87/250; 34.8% versus 32/65; 49.2 percent) (p = 0.033).\(^7\) Another study found that the average age (SD) was 42.95 (16.32).\(^8\)

According to the findings of the Hong et al. study, in individuals under 36 years old, a higher the rise in adulthood linked to a higher incidence of *H. pylori* infection, with a maximum at 36 years of age. Infection with *H. pylori* did not increase substantially with age in patients older than 36 years.\(^9\)

*Free T4:* The concentration of free T4 in the test-negative patients was 1.67 ng/dL, while its concentration decreased insignificantly (p = 0.2705) in the test-positive patients, as its concentration was 1.22 ng/dL. The table implies that no substantial differences exist (p > 0.05) in the concentration of free T4 between females and males.

**Table 1:** Distribution of *H. pylori* patients according to sex.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Negative N(%)</th>
<th>Positive N(%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>28 (66.7 %)</td>
<td>36 (85.7 %)</td>
<td>0.31731</td>
</tr>
<tr>
<td>Male</td>
<td>14 (33.3 %)</td>
<td>6 (14.3 %)</td>
<td>0.07364</td>
</tr>
<tr>
<td>Total</td>
<td>42 (100 %)</td>
<td>42 (100 %)</td>
<td>1.0000</td>
</tr>
<tr>
<td>p-value</td>
<td>0.03075 *</td>
<td>0.00001 **</td>
<td></td>
</tr>
</tbody>
</table>

* denotes meaningful statistically differences (P < 0.05). ** identifies substantial variations (p < 0.001).

**Table 2:** The age of *H. pylori* patients.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Negative (Mean±SD)</th>
<th>Positive (Mean±SD)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>45.71 ± 11.92</td>
<td>48.83 ± 9.51</td>
<td>0.2484</td>
</tr>
<tr>
<td>Male</td>
<td>38.71 ± 9.12</td>
<td>54.66 ± 24.02</td>
<td>0.0409 *</td>
</tr>
<tr>
<td>Total</td>
<td>43.38 ± 11.45</td>
<td>49.66 ± 12.32</td>
<td>0.0177 *</td>
</tr>
<tr>
<td>P value</td>
<td>0.0609</td>
<td>0.2888</td>
<td></td>
</tr>
</tbody>
</table>

* denotes meaningful statistically differences (P < 0.05). ** identifies substantial variations (p < 0.001).
The patients with *H. pylori* are old, especially in males. Also, there seems to be no connection between people infected with *H. pylori* and concentrations of free F4 hormone, and on the contrary, patients with *H. pylori* have a higher concentration of FSH hormone compared negative *H. pylori* antigen test.

**REFERENCES**


