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Original Article

Evaluation of Helicobacter pylori Infection with Endoscopic, Pathological, and Laboratory Findings

Helicobacter pylori Enfeksiyonunun Endoskopik, Patolojik ve Laboratuvar Bulgularıyla Değerlendirilmesi

Mehmet Alperen AVCI[1]*, Merve Nergis FIDAN[2], İsmail Oskay KAYA[2]

[1] SB Sorgun Devlet Hastanesi Genel Cerrahi Kliniği, Yozgat/TÜRKİYE
[2] SBÜ, Dışkapı Yıldırım Beyazıt Eğitim ve Araştırma Hastanesi Genel Cerrahi Kliniği, Ankara/TÜRKİYE

ABSTRACT

Aim: Helicobacter pylori, the most common bacterial infestation in the gastrointestinal tract. It is known to role in the development of intestinal metaplasia, dysplasia, gastric cancer, and atrophic gastritis. H. pylori infection has been thought to be related with many diseases such as iron deficiency, vitamin b deficiency…In our study, we aimed to evaluate the patients who underwent endoscopic examination in terms of endoscopic, pathological and laboratory (Hemogram and iron values) findings.

Material and Methods: Between October 2020 and July 2021, 322 patients who were requested endoscopic examination and laboratory examination due to gastrointestinal system complaints were included in the study.

Results: In our study; 152 H. pylori negative cases and 170 Helicobacter pylori positive cases were detected. Helicobacter pylori negative (HP-) group, the number of men was 50 and the number of women was 102. In the HP+ group, the number of men was 61 and the number of women was 109 (P=0.6387). The mean age in the (HP-) group was 51.48 ± 1.260. The mean age in the HP+ group was 48.29 ± 1.215 (P=0.0700). HGB value in the HP- group was 13.66 ± 0.1249, and in the HP+ group, it was found 13.95 ± 0.1359 (P=0.1194). The mean MCV value was found to be 85.74 ± 0.4877 in the HP- group, and 85.69 ± 0.5860 (P=0.9505) in the HP+ group. The mean Ferritin value in the HP- group was 38.71 ± 2.979, and 44.38 ± 3.195 (P=0.1983) in the HP+ group. In addition, 31 cases with Pangastritis in the HP- group and 54 cases in the HP+ group were detected (p=0.0208).

Conclusion: In our study; the endoscopic, laboratory and pathological findings of HP infection were examined, no significant relationship was found between age, gender, HGB, MCV and Ferritin values with HP infection. There is no negative correlation with Antral gastritis and Atrophic gastritis in gastritis cases, a significant correlation was found between pangastritis and HP (p=0.0208).

Keywords: Endoscopy; helicobacter pylori; ferritins

Corresponding Author*: Mehmet Alperen AVCI, SB Sorgun Devlet Hastanesi Genel Cerrahi Kliniği, Yozgat/TÜRKİYE
E-mail: dr.maavci@gmail.com
ORCID: 0000-0003-3911-2686
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ÖZ

Amaç: Helicobacter pylori, gastrointestinal sistemdeki en yaygın bakteridir. Bağırsak metaplazisi, displazi, mide kanseri ve atrofik gastrit gelişiminde rol oynadığı bilinmektedir. H. pylori enfeksiyonunun demir eksikliği, B vitamini eksikliği gibi birçok hastalıkla ilişkili olduğu düşünülmüştür… Çalışmamızda endoskopik inceleme yapılan hastaların endoskopik, patolojik ve laboratuvar (hemogram ve demir değerleri) bulguları açısından değerlendirmeyi amaçladık.

Gereç ve yöntemler: Ekim 2020 - Temmuz 2021 tarihleri arasında gastrointestinal sistem şikayetleri nedeniyle endoskopik muayene ve laboratuvar tetkiki istenen 322 hasta çalışmaya dahil edildi.

Bulgular: Çalışmamızda; 152 H. pylori negatif vaka ve 170 Helicobacter pylori pozitif vaka tespit edildi. Helicobacter pylori negatif (HP-) grubunda erkek sayısı 50, kadın sayısı 102 idi. HP+ grubunda erkek sayısı 61, kadın sayısı 109 idi (P=0,6387). (HP-) grubundaki yaş ortalaması 51,48 ± 1,260 idi. HP+ grubunda ortalama yaş 48,29 ± 1,215 (P=0.0700) idi. HP- grubunda HGB değeri 13,66 ± 0.1249, HP+ grubunda 13,95 ± 0,1359 (P=0,1194) bulundu. Ortalama MCV değeri HP- grubunda 85,74 ± 0,4877, HP+ grubunda 85,69 ± 0,5860 (P=0,9505) olarak bulundu. HP- grubunda ortalama Ferritin değeri 38,71 ± 2,979, HP+ grubunda 44,38 ± 3,195 (P=0,1983) idi. Ayrıca HP- grubunda 31, HP+ grubunda 54 Pangastrit vakası tespit edildi (p=0,0208).

Sonuç: Çalışmamızda; HP enfeksiyonunun endoskopik, laboratuvar ve patolojik bulguları incelendiğinde, HP enfeksiyonu ile yaş, cinsiyet, HGB, MCV ve Ferritin değerleri arasında anlamlı bir ilişki bulunmadı. Gastritli olgularda Antral gastrit ve Atrofik gastrit ile negatif korelasyon bulunmazken, pangastrit ile HP arasında anlamlı korelasyon bulundu (p=0.0208).

Anahtar kelimeler: Endoskopi, helikobakter pylori, ferritin

Introduction

Helicobacter pylori was defined as a microaerophilic, spiral-shaped and motile bacterium in 1983 by Marshall et al. It is accepted that half of the world population is infected with H. pylori [1-2]. Helicobacter pylori, the most common bacterial infestation in the gastrointestinal tract, has been shown to be 70-80% in gastric ulcers and 93-95% in duodenal ulcers [3-5].

The affinity of H. pylori to the gastric mucosa is known, and it is most frequently seen in the antrum mucosa. It is known to play a role in the development of intestinal metaplasia, dysplasia, gastric cancer, and atrophic gastritis [6]. H. pylori infection has been thought to be related with many diseases such as growth retardation (due to iron deficiency, vitamin b deficiency, etc.), hematological diseases, especially coronary artery disease of unknown cause, immunothrombocytopenic purpura, and iron deficiency anemia [7].

Ferritin is closely related to mobilizable iron stores of the body and can be used as a marker for iron stores [8]. Hemoglobin levels can be kept within the normal range until body iron stores are depleted [9].

In the diagnosis and treatment of H. pylori, it is recommended to support laboratory diagnosis with endoscopy and simultaneous biopsy sample for clinical diagnosis in developed countries [10]. Thus, in the present study, we aimed to evaluate the patients who underwent endoscopy due to various complaints in terms of pathological and laboratory (hemogram and ferritin values) findings.

Materials and Methods

With the permission of Yozgat Provincial Health Directorate, 322 cases who underwent endoscopic procedure with various gastrointestinal system complaints in Sorgun District State Hospital between October 2020 and July 2021 were included in the study. Approval was obtained from the clinical research ethics committee of the Ministry of Health, University of Health Sciences, Dışkapı Yıldırım Beyazıt Training and Research Hospital (20.09.2021: 120/06). All people included in the study signed the informed consent form. Biopsies (stomach antrum) were performed and taken by experienced endoscopists (>300 procedures/year) were recorded as pathological procedure. All cases over the age of 18 were included in the study. Cases who received Helicobacter pylori treatment, had gastrointestinal bleeding, had a history of using various drugs (with a history of PPI use, receiving iron replacement therapy, etc.) were not included in the study. Endoscopic biopsy preparations of the cases were stained with hematoxylin-eosin, Touluidine blue or Giemsa, and were evaluated and recorded as presence or absence of H. pylori. Laboratory (hemogram and ferritin values), demographic, and etiological data were obtained from the hospital information automation system.

The data were analyzed with Fisher's exact test, t-test and chi-square test using GraphPad Prism ver. 5. P values of <0.05 were considered statistically significant.

Results

The mean arithmetic age of 322 patients in our study was 49.80. The male/female ratio was found to be 0.53 (n:111/211). When the laboratory values were examined, HGB was 13.81 (Normal value: 12.2-16.2), MCV was 84.81 (Normal value: 80-101) and Ferritin was 41.70 (Normal value: 15-276.8) as arithmetic mean. When evaluated endoscopically, there were 212 cases with antral gastritis, 7 cases with atrophic gastritis, 85 cases with pangastritis, 4 cases with normal endoscopic findings, 20 cases with ulcers in the antrum, and 12 cases with ulcers in the duodenum. Pathologically, 152 H. pylori negative cases and 170 Helicobacter pylori positive cases were detected. In our study, there were two groups, Helicobacter pylori negative (HP-) cases and Helicobacter pylori positive (HP+) cases.

In the Helicobacter pylori negative (HP-) group, the number of men was 50 and the number of women was 102. In the HP+ group, the number of men was 61 and the number of women was 109 (P=0.6387). According to Fisher's exact test, H. pylori infection was not related to gender. The mean age in the (HP-) group was 51.48 ± 1.260. The mean age in the HP+ group was 48.29 ± 1.215 (P=0.0700). No significant difference was found in the statistical analysis by t-test (Table 1).

In laboratory values, the mean HGB value in the HP- group was 13.66 ± 0.1249, and in the HP+ group, it was found 13.95 ± 0.1359 (P=0.1194). The mean MCV value was found to be 85.74 ± 0.4877 in the HP- group, and 85.69 ± 0.5860 (P=0.9505) in the HP+ group. The mean Ferritin value in the HP- group was 38.71 ± 2.979, and 44.38 ± 3.195 (P=0.1983) in the HP+ group. No statistically significant difference was found in laboratory comparison (Table 1).

Table 1: Distribution of etiological and laboratory values of the patients

	Gender	Age	HGB	MCV	Ferritin
H. pylori (-)	Male: 50 Female: 102	51.48 ± 1.260 N=152	13.66 ± 0.1249 N=152	85.74 ± 0.4877 N=152	38.71 ± 2.979 N=152
H. pylori (+)	Male:61 Female:109	48.29 ± 1.215 N=170	13.95 ± 0.1359 N=170	85.69 ± 0.5860 N=170	44.38 ± 3.195 N=170
p value	0.6387	0.0700	0.1194	0.9505	0.1983

In the endoscopic evaluation, 108 cases with antral gastritis, 3 cases with atrophic gastritis, 8 cases with ulcers in the antrum, and 7 cases with ulcers in the duodenum were detected in the HP- group, while in the HP+ group, 104 cases with antral gastritis, 4 cases with atrophic gastritis, 12 cases with ulcers in the antrum, and 5 cases with ulcers in the duodenum were detected. According to the chi-square analysis, it was observed that H. pylori infection was not related to individuals with "Antral gastritis", "Atrophic Gastritis", "Ulcer in the antrum", and "Ulcer in the duodenum" (p=0.1909). In addition, 31 cases with Pangastritis in the HP- group and 54 cases in the HP+ group were detected (p=0.0208). Statistical analysis with Fisher's exact test revealed a significant relationship between Helicobacter Pylori and Pangastritis (Table 2).

Table 2 Distribution of patients according to endoscopy results

	Antral gastritis	Atrophic Gastritis	Ulcer in the antrum	Ulcer in the duo-denum	Pangas-tritis
H. pylori (-)	108	3	8	7	31
H. pylori (+)	104	4	12	5	54
p values	0.0621	>0.1	0.6450	0.4313	0.0208

Discussion

H. pylori is a spiral, comma-shaped gram-negative bacteria that can colonize the stomach, especially in the corpus, antrum region, and duodenum. HP infection is present in 70-90% of Africa, Mexico, Asia, and Central America [11]. Many studies have found that H. pylori increases with age. In the study of Megraus et al, it has been observed that the frequency of atrophic gastritis increases with age, and the frequency of HP infection decreases [12]. According to the Eurogast study group, the frequency of HP was found in the elderly group (61.4%) and in the younger group (34.9%), and the frequency was found to be more intense in the elderly population [13]. In our study, however, no statistically significant result was found between HP infection and age. In the study of Selek et al. [14] and Erçetin et al. [15], a statistically significant result could not be reached between the frequency of HP and gender, as was the case in our study.

In recent studies, it has been determined that HP infection is associated with iron deficiency anemia [16]. In a study, two different HP strains were determined, one of which caused iron deficiency, and the other did not cause iron deficiency [17]. It is thought that HP infection plays a role in the etiology of iron deficiency anemia, but there is no velar theory about it. According to various hypotheses, it is predicted that HP infection inhibits iron absorption, autoimmunity, and obtains iron from the host for its life cycle [18]. In the study of Nalbant et al. [19], there was no difference in hemoglobin and ferritin values, and in the study of Hershko et al. [20], it was found that hemoglobin values improved after HP eradication in HP+ cases. In the study of Zuberi et al. [21] when HP cases were compared, no significant

difference was found in MCV values, and significantly lower values were found in Ferritin and HGB values. In our study, no statistically significant difference was found between the groups in terms of HGB, MCV, and Ferritin values.

There are many studies on the stomach and duodenum in which HP infection plays a role in the etiology. In the review by Gisbert et al. [22], in which they reviewed 73 studies, they found the prevalence of H. pylori to be 81.2% in 16,080 cases with duodenal ulcer. There are also studies in which chronic gastritis accompanies in HP positive cases [23]. Although the rate of cases with antrum ulcer was high in HP+ cases with duodenal ulcer and antrum ulcer in our study, statistical significance could not be found in both groups. In the statistical analysis of our gastritis cases in two groups, Antral Gastritis and Atrophic Gastritis were not significantly associated with HP; however, statistical analysis of our Pangastritis cases with HP groups revealed a significant relationship with HP infection (p=0.0208).

Limitations of the study are as follow: Cases with gastrointestinal bleeding, systemic and chronic disease, emergency treatment and non-gastritis diagnosis in endoscopic examination were excluded from the study, and this was limited to 322 cases in a short period of time in the district state hospital. On the other hand, the biopsies taken in the pathological evaluation were made from the antrum where HP infection is most common.

Conclusion

When the endoscopic, laboratory and pathological findings of HP infection were examined in our study, no significant relationship was found between age, gender, HGB, MCV and Ferritin values with HP infection. Even though a proportionally high level of HP infection was observed in patients with antrum ulcer in endoscopic procedures, no relationship was found between Duodenal and Antral ulcers and HP. While there is no negative correlation with Antral gastritis and Atrophic gastritis in gastritis cases, a significant correlation was found between pangastritis and HP (p=0.0208).

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