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Helicobacter pylori incidence of patients with gastritis in endoscopic biopsies

Endoskopik biyopsilerde gastrit saptanan hastalarda helikobakter pylori sıklığı

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Abstract

Aim: H. pylori is the most common permanent bacterial infection worldwide and an important health problem in terms of the diseases it causes. The aim of this study was to determine H. pylori incidence according to age and gender in biopsy materials of patients who were diagnosed with gastritis.

Methods: This was a cross-sectional study which examined the endoscopic and pathological reports of 1240 patients who were diagnosed with gastritis between June 2014 and October 2019 and underwent biopsy from the antrum. The incidence of H. pylori infection was evaluated according to age and gender. Based on the Sydney classification, the patients were scored as none (-), low (+), medium (++) and high (+++) in the pathological records. Patients were divided into 5 age groups: 18-34, 35-44, 45-64, 65-74 and ≥75 years.

Results: A total of 1240 patients, 664 (53.5%) females and 576 (465%) males were included in the study. The mean age of the patients was 49.9 (16.2). A total of 422 (34.0%) patients were H. pylori (+), while 818 (66.0%) were H. pylori (-). H. pylori density was low in 123 (29.1%) patients, medium in 207 (49.1%) patients, and high in 92 (21.8%) patients. There was no difference in terms of H. pylori positivity with regards to age and gender (P=0.296, P=0,812, respectively). The number of H. pylori (+) and (-) patients in the groups were as follows: Group 1: 71 (16.8%) vs. 160 (19.6%), Group 2: 125 (29.6%) vs. 186 (22.7%), Group 3: 134 (31.8%) vs. 281 (34.4%), Group 4: 60 (14.2%) vs. 120 (14.7%) and Group 5: 32 (7.6%) vs. 71 (8.7%). H. pylori positivity rates were as 30.7%, 40.2%, 32.3%, 33.3% and 31.1% for groups 1, 2, 3, 4 and 5, respectively. Although the Group 2 (35-44 years) had the highest rate, it was not statistically significant (P=0.117).

Conclusion: In our study, the incidence of H. pylori was 34%, and this rate is pleasing in terms of decreasing H. pylori incidence in our country compared to previous studies.

Keywords: H. pylori, Incidence, Age, Gender

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Öz

Amaç: H. pylori dünya çapında en sık görülen kalıcı bakteriyel enfeksiyondur ve neden olduğu hastalıklar açısından önemli bir sağlık sorunudur. Bu çalışmanın amacı, endoskopik olarak gastrit tanısı alan hastaların biyopsi materyallerinde yaş ve cinsiyete göre H. pylori insidansını belirlemektir.

Yöntemler: Bu çalışma Haziran 2014-Ekim 2019 tarihleri arasında gastrit tanısı alan ve antrumdan biyopsi yapılan 1240 hastanın endoskopik ve patolojik raporlarını inceleyen kesitsel bir çalışmadır. Sydney sınıflamasına göre, hastalar patolojik kayıtlarda yok (-), düşük (+), orta (++) ve yüksek (+++) olarak skorlandı. Hastalar ; 18-34, 35-44, 45-64, 65-74 ve ≥75 olmak üzere 5 farklı yaş grubuna ayrıldı.

Bulgular: Çalışmaya 664 (%53,5) kadın ve 576 (%46,5) erkek olmak üzere toplam 1240 hasta dahil edildi. Hastaların ortalama yaşı 49,9 (16,2) idi. H. pylori (+) olanların sayısı 422 (%34,0), H. pylori (-) olanların sayısı ise 818 (%66,0)'di. H. pylori yoğunluğuna göre değerlendirildiğinde 123 (%29,1) hastada düşük, 207 (%49,1) hastada orta ve 92 (%21,8) hastada yüksekti. Yaş ve cinsiyetler arasında H. pylori pozitifliği açısından herhangi bir fark yoktu (Sırasıyla P=0,296, P=0,812). Gruplardaki H. pylori (+) ve (-) hasta sayısı şöyleydi: Grup 1: 71 (%16,8) - 160 (%19,6), Grup 2: 125 (%29,6) - 186 (%22,7), Grup 3: 134 (%31,8) - 281 (%34,4), Grup 4: 60 (%14,2) - 120 (%14,7) ve Grup 5: 32 (%7,6) - 71 (%8,7). 1,2,3,4 ve 5. gruplardaki H. pylori pozitiflik oranları sırasıyla %30,7, %40,2, %32,3, %33,3 ve %31,1 idi. En yüksek oran grup 2'de (35-44 yaş) saptanmış olmasına rağmen, bu istatistiksel olarak anlamlı değildi (P=0,117).

Sonuç: Çalışmamızda, H. pylori insidansı %34 olarak saptanmıştır ve bu oran daha önceki çalışmalarla kıyaslandığında, ülkemizde H. pylori insidansının azalması açısından memnuniyet vericidir.

Anahtar kelimeler: H. pylori, Sıklık, Yaş, Cinsiyet

Introduction

Helicobacter pylori (H. pylori) was first described by Marshall and Warren in the stomach epithelium of patients with chronic atrophic gastritis in 1983 and also it has been shown to play roles in other gastrointestinal system diseases in the next years [1]. It is a gram-negative, spiral-shaped, motile, and flagellate bacteria that produces urease enzymes, usually found under the gastric mucus layer, close to epithelial cells, and damages them [2].

It is estimated that approximately 50% of the global population is infected with H. pylori [3] and it is one of the major risk factors for diseases such as chronic gastritis, peptic ulcer disease, gastric carcinoma, and gastric mucosal associated lymphoid tumor (MALT lymphoma) [4]. Although the transmission routes for H. pylori are not exactly known, low socioeconomic levels, poor hygiene, living in crowded environments, iron deficiency anemia, poor nutrition, coronary artery disease, 0 blood group and low education level of the mother are considered risk factors [5]. In recent years, it has become less common due to socioeconomic development, smaller family sizes, improved sanitation, and the frequent use of antibiotics [3].

The diagnosis of H. pylori is made by either non-invasive methods such as serology, 13C urea breath test and stool antigen test, or by the invasive methods including the examination of endoscopic biopsy specimens with histopathological, culture and rapid urease tests and polymerase chain reaction test [6]. In pathological diagnosis, hematoxylin eosin and modified giemsa dyes are preferred because they are sensitive, easy, and accessible [7].

In this study, we aimed to determine the distribution of the frequency of H. pylori according to age and gender in biopsy materials of patients who were diagnosed with gastritis endoscopically and underwent biopsy from antrum.

Materials and methods

For this study, endoscopic and pathological reports of patients who were diagnosed with gastritis between June 2014 and October 2019 at the gastroenterology clinic of Acıbadem Kayseri Hospital and underwent biopsy from the antrum were evaluated retrospectively. Esophagogastroduodenoscopy was performed to all patients with a white light video endoscopy using high definition system (Olympus Evis Exera II CV180, NBI) by the same endoscopist. This study was approved by the Acibadem University Ethics Committee (ATADEK, 1/9/2020, 2020-01/31).

The patients who had at least 3 biopsies from the antrum were included in the study. Patients with active bleeding or an evidence of malignancy were excluded. Biopsy specimens of the patients obtained from the antrum were stained with hematoxylin eosin and giemsa and examined under light microscopy. Based on the Sydney classification, the patients were scored as none (-), low (+), medium (++) and high (+++) in the pathological records. The frequency of H. pylori infection was evaluated according to gender and age groups. Patients were divided into 5 age groups: Group 1: Patients between the ages of 18-34 years, Group 2: Patients between the ages of 35-44 years, Group 3: Patients between the ages of 45-64 years, Group 4: Patients between the ages of 65-74 years, Group 5: Patients ≥75 years.

Statistical analysis

Statistical Package for the Social Sciences [SPSS] v 22 was used for statistical analyses. We reported continuous variables as mean (standard deviation [SD]), and categorical variables as numbers (n) and percentages (%). While groups were compared with chi-square test, student t test was used to calculate the mean age of each group. P-values <0.05 were considered significant.

Results

A total of 1240 patients, aged between 18-97 years, were included in the study. The mean age of the patients was 49.9 (16.2) years. Among 1240 patients included in the study, 664 (53.5%) were females and 576 (46.5%) were males. The mean age of the females and males were 50.0 (16.6) and 49.7 (15.8) years, respectively.

The number of H. pylori (+) and H. pylori (-) patients were 422 (34.0%) and 818 (66.0%), respectively. H. pylori density was low in 123 (29.1%) patients, medium in 207 (49.1%) patients, and high in 92 (21.8%) patients (Table 1).

The number of H. pylori (+) and (-) females were 224 (33.7%) and 440 (66.3%), respectively while the number of H. pylori (+) and (-) males were 198 (34.4%) and 378 (65.6%), respectively. There was no difference in terms of H. pylori positivity between age and genders (P=0.296, P=0.812, respectively) (Table 2).

The number of H. pylori (+) and (-) patients in the age groups were as follows: Group 1: 71 (16.8%) vs. 160 (19.6%), Group 2: 125 (29.6%) vs. 186 (22.7%), Group 3: 134 (31.8%) vs. 281 (34.4%), Group 4: 60 (14.2%) vs. 120 (14.7%) and Group 5: 32 (7.6%) vs. 71 (8.7%). H. pylori positivity rates were as 30.7%, 40.2%, 32.3%, 33.3% and 31.1% for groups 1, 2, 3, 4 and 5, respectively There was no difference in terms of H. pylori positivity between the groups (P=0.122) (Table 3).

In addition, when patients were grouped as <50 years of age and ≥50 years of age, there was no significant difference in terms of H. pylori positivity (233 vs. 139, P=0.07).

Table 1: The prevalence of H. pylori

H. pylori	Negative (-)	Total Positive	Positive (+)	Positive (++)	Positive (+++)
n	818	422	123	207	92
%	66	34	29.1	49.1	21.8

Table 2: Distribution of H. pylori by gender

	Total	H. pylori (+)	H. pylori (-)	P-value
n	1240	422	818	
Gender				
Female n (%)	664 (53.5)	224 (33.7)	440 (66.3)	0.812
Male n (%)	576 (46.5)	198 (34.4)	378 (65.6)	
Age mean (SD)	49.9 (16.2)	49.7 (15.4)	50.0 (16.6)	0.296

Table 3: H. pylori distribution by age groups

Age groups	HP (-)	HP (+)	P-value
Group 1 (18-34) n %	160 (69.3)	71 (30.7)	0.122
Group 2 (35-44) n %	186 (59.8)	125 (40.2)	
Group 3 (45-64) n %	281 (67.7)	134 (32.3)	
Group 4 (65-74) n %	120 (66.7)	60 (33.3)	
Group 5 (>=75) n %	71 (68.9)	32 (31.1)	

Discussion

H. pylori is the most common permanent bacterial infection worldwide and an important health problem in terms of the diseases it causes. At the beginning of 2000s, the prevalence of adults infected by H. pylori was believed to be more than 80%

in developing nations and 20% to 50% in industrialized countries [8]. Although it is suggested that the transmission of H. pylori can occur through fecal-oral, oral-oral, or iatrogenic routes; the exact mechanism still remains uncertain [9].

H. pylori frequency differs among different geographic regions and ethnic groups [10]. An ethnic group study by Lee et al. [11] reported that the histopathological examination of endoscopic biopsy samples showed that H. pylori positivity was 48.3%, 67.4% and 77.9% in American, Korean and Japanese subjects, respectively. In the EUROGAST study conducted in asymptomatic whites between the ages of 25-34, covering 3194 individuals, H. pylori positivity was reported as 15% in Minneapolis-St. Paul Minnesota, 62% in Japan and 70% in some regions of Poland [12]. In a study by Wex et al. [13] conducted in Germany in 2010, immunoglobulin G antibodies were examined in the blood serologically and the frequency of H. pylori was 44.4%. Also, there was no difference between genders.

The prevalence of H. pylori is higher in the geographical location of our country, compared to western societies. In the study of Özardalı et al. [14] in Şanlıurfa region in 1998, H. pylori was detected in 89.8% of patients diagnosed with chronic atrophic gastritis. In a study performed by Özdil et al. [15] in 2010, the frequency of H. pylori was 71.3% in the histopathological samples of 3301 patients who underwent biopsy from both the corpus and antrum. Uyanıkoğlu et al. [16] showed the frequency of H. pylori as 71.3% in their study including 1298 endoscopic antrum biopsies. A serological study carried out in Van province and its region in 2012 by Esen et al [17] showed 87% positivity of H. pylori. This rate was 78.4% in the study of Demirtaş et al. [18] containing 1405 antrum and corpus biopsies of patients in Erzincan province, in 2014. However, in recent years, decreases in H. pylori prevalence are noteworthy in studies conducted in our country. In this context, Turan et al. [19] found the H. pylori positivity rate as 43.85% in year 2017. In our study, this rate was even lower, 34%. In our opinion, the most important reason for the decrease in H. pylori positivity rate has been the increase of awareness among physicians in recent years and the application of eradication treatment more frequently. In addition to the awareness of clinicians, the increase in the use of social media, especially in recent years, has increased the awareness of patients and the frequency of consulting a doctor about this subject. According to the results of a study published in China in 2019, the effect of social media on H. pylori treatment is quite remarkable. In this study, H. pylori (+) patients confirmed with positive carbon-14 (C14) breath tests and endoscopic biopsies and also showed the indications for H. pylori eradication treatment were divided into two groups: The intervention group used a social media platform as a reminder besides traditional instructions and the control group was only given traditional instructions verbally about the dose and method of medication, the precautions that should be taken during the medication regimen and informiation related to follow-ups. The results of this study were as follows: Compared to the control group, the intervention group had significantly better awareness of H. pylori, significantly higher treatment adherence and significantly higher eradication rate whereas there

was no significant difference in terms of drug related adverse reactions [20].

In our study, no difference was found between genders in terms of H. pylori positivity. There are publications in the literature that do not detect gender differences similar to our study [18,19,21-23], as well as studies that show high frequency of H. pylori in men or women [24,25]. In our study, the highest positivity rate was 40.2% between the ages of 35-44 years, while the lowest positivity rate was found to be 30.7% in the 18-34-year age group. Megraud et al. [26] showed that H. pylori decreases and loses its habitat in the older age because of increased incidence of atrophic gastritis in this age group. However, in our study, we did not detect such a decrease in the older age group and there was no difference between the age groups. Similar to our study, there was an age group in the study of Marusic et al [27], where the H. pylori positivity rate was high and they reported that the number of the H. pylori infected patients were highest between the ages of 51-70.

H. pylori exhibits a patchy placement in the stomach and is mostly located in the antrum [28]. In our study, all biopsy samples were taken from at least 3 different points of the antrum. Although this seems to be a restrictive point in our study, there are many publications in the literature that support the higher rates of H. pylori positivity in the antrum than in the corpus [29,30].

As a result, in our study, we found the H. pylori positivity rate as 34% in the biopsy samples taken from antrum. In the literature review, this rate seems to be quite low for our country compared to the studies in previous years. Although many causative factors can be considered for this decrease, we think that the worthiest among them is the increase of awareness among physicians in recent years and the application of eradication treatments more frequently. Another key factor of this decrease is the increased use of social media in recent years, thus increased awareness of patients and the frequency of consulting a doctor about this subject. We think that improving the socioeconomic status and ensuring compliance with hygiene conditions will further pull these figures backwards, and therefore a reduction in many H. pylori related diseases can be achieved.

Limitations

The most important limitation of our study is that no biopsy was obtained from the corpus. Meticulously designed clinical studies that will be performed by taking biopsies from both the antrum and corpus will be more useful in determining the incidence of H. pylori.

Conclusion

In recent years, the frequency of H. pylori has been decreasing in our country. We found the H. pylori frequency as 34% in our study and this was one of the lowest among the studies in our country. Based on the available data and considering the obvious changes in the epidemiological features of H. pylori infection, we think that the local prevalence of H. pylori infection should be investigated by focusing on specific age groups.

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