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Original Article / *Klinik Çalışma - Araştırma*

Helicobacter Pylori Infection and Benign Gastroduodenal Diseases, Data from the Trakya Region

Helikobakter Pilori İnfeksiyonu ve Benign Gastroduodenal Hastalıklar, Trakya Bölgesi Verileri

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Objective: Helicobacter pylori (H. pylori) is implicated in the etiology of gastric and duodenal ulcer, non-ulcer dyspepsia, atrophic gastritis, gastric adenocarcinoma and mucosa associated lymphoid tissue lymphoma (MALToma). The aim of our study is to evaluate the prevalance of H. pylori infection in patients with benign gastroduodenal diseases.

Material and Methods: H. pylori infection was evaluated retrospectively with the urease test in 4714 patients with benign gastroduodenal disorders who applied to the endoscopy unit of Trakya University Hospital, the only University hospital in the Trakya region, between November 2003 and October 2007 with dyspeptic complaints.

Results: Overall, the rapid urease test was positive in 52.8% of cases. Helicobacter pylori was positive in 65% of the bulbar ulcer, 61% of the erosive bulbitis, 60.2% of the gastric ulcer and, 48.4% of the gastritis patients. (p<0.001). H. pylori positivity was 52% in Trakya born patients, 56.3% in immigrants from Anatolia and 48.7% in immigrants from Europe (p=0.02). H. pylori positivity frequencies in women and men were 52.2% and 53.2%, respectively (p=0.52). Urease test positivity was significantly more frequent in patients 30-60 years of age compared to the groups younger than 30 or older than 60.

Conclusion: The epidemiologic characteristics of H. pylori infection shows features of both Turkey and neighbouring countries of Europe.

Key words: Helicobacter pylori infection; epidemiology; peptic ulcer disease.

Amaç: Helikobakter pilori (H. pilori) gastrik ve duodenal ülser, non-ülser dispepsi, atrofik gastrit, mide kanseri ve MALT lenfoması etiyolojisinde rol oynamaktadır. Çalışmamızda Trakya bölgesinde beniğn gastroduodenal hastalıklarda H. pilori infeksiyonu prevelansı araştırılmıştır.

Gereç ve Yöntemler: Trakya Üniversitesi Tıp Fakültesi Endoskopi Ünitesine başvuran ve beniğn gastroduodenal hastalıklar saptanan 4714 hastada retrospektif olarak H. pilori infeksiyonu prevelansı araştırıldı.

Bulgular: Hastaların %52.8'inde H. pilori pozitif saptandı. H. pilori bulber ülser hastalarında %65, gastrik ülserli hastalarda %60.2, gastritli hastalarda ise %48.4 oranında pozitif bulundu (p<0.001). Trakya bölgesi kökenli hastaların %52'sinde, Anadoludan göç eden hastaların %56.3'ünde, Avrupadan göç eden hastaların %48.7'sinde H. pilori pozitif bulundu (p=0.02). Helikobakter pilori kadınlarda %53.2, erkeklerde %52.2 oranında pozitifti (p=0.52). Üreaz pozitifliği 30-60 arasındaki hastalarda 30 yaşından küçükler ve 60 yaşından büyüklere göre daha fazlaydı.

Sonuç: Trakya bölgesinde H. pilori infeksiyonu hem ülkemizin diğer bölgeleri ile hemde komşu avrupa ülkeleri ile benzer epidemiyolojik özellikler göstermektedir.

Anahtar sözcükler: Helikobakter pilori infeksiyonu; epidemiyoloji; peptik ülser hastalığı.

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INTRODUCTION

Infection with Helicobacter pylori, a microaerophilic gram negative bacterium, is associated with peptic ulcer disease, atrophic gastritis, gastric cancer and gastric mucosa associated lymphoid tissue lymphoma.[1-5] Almost half of the world's population is thought to be infected with this bacteria.[6] It is estimated that perhaps as many as 5-15% of individuals may develop peptic ulceration during their lives, while as many as 1 in 100 may develop gastric adenocarcinoma.[6] The geographic distribution of H. pylori infection is closely related to the socioeconomic status. In industrialized countries, HP infection is acquired at a fairly constant rate of 2-6% per year with a prevalence of 20-40% in adults. In developing countries, the infection is acquired in early childhood with higher rates, and 70-90% of the population is thought to be infected by the age of 20 years.[7-10] Although the prevalence of the infection has decreased significantly in many parts of North America and Western Europe, it is still an important problem in developing countries such as Turkey.[11]

The prevalance of infection in a country is thought to vary among the regions according to the socioeconomic status of the inhabitants. The Trakya region is located on the western border of the country having neighbouring borders with Bulgaria and Greece. Its population is approximately one million. The population is mostly composed of people born in this region as well as migrated from the other regions of Turkey, since it is located on the European side of the country.

Helicobacter pylori infection can be evaluated by using several diagnostic methods. In our study we aimed to evaluate the prevalance of H. pylori infection in the Western region of Turkey with the Clo test, which is based on the detection of urease activity in antral biopsy specimens. The sensitivity and specificity of the test were observed to be 97% and 98%, respectively.[12-17]

MATERIAL AND METHODS

Between November 2003 and October 2007, 7590 upper alimentary tract endoscopic examinations were performed in the endoscopy unit of Trakya University, Medical Faculty the examinations were performed after 12 h of fasting. During the examinations, biopsies were obtained from an area within the 3 cm of the pylorus and the sample was placed into the rapid urease test medium. The results were assessed within the first 20 minutes. Data on age, sex, origin (born in Trakya region or have migrated), and history of previous upper gastrointestinal tract operations were recorded. In addition, the endoscopic diagnoses were classified in detail. Endoscopic diagnosis has been defined according to the Minimal Standard Terminology version 2.0 prepared by the Committee for Terminology of the European Society for Gastrointestinal Endoscopy (ESGE), the Informatics Committee of the American Society for Gastrointestinal Endoscopy (ASGE) and the Terminology and Data processing Committee of the World Organisation of Digestive Endoscopy (OMED) as erythematous gastritis, gastric ulcer, bulbar ulcer and erosive bulbitis.

Statistical evaluation of the results was performed using the chi-square test and the values of $p<0.05$ was considered as significant.

RESULTS

A total of 7590 upper endoscopic examinations were performed within the reported period at the Trakya University, Medical Faculty Upper Gastrointestinal Endoscopy Unit. 4714 patients with erythematosis antral gastritis, gastric ulcer, and erosive bulbitis were included in this study. 50.6% of the patients were female while 49.4% were male. The mean age of the women and men was 50.6 years (range, 14-90 years) and 52.2 years (range, 14-94 years), respectively. The rapid urease test was positive in 52.8% of all the cases. The frequencies of positivity in women and men were 52.2% and 53.2%, respectively. No statistical significance was found regarding the gender ($p=0.52$). Thus, the frequency of H. pylori positivity was found to be higher in patients 30-60 years of age compared to those younger than 30 as well as older than 60 (Table 1).

Of the 4714 upper endoscopic examinations, 723 were bulbar ulcers, 332 gastric ulcers, and 362 were erosive bulbitis. The remaining 3297 examinations revealed only antral or corporal gastritis with erythema. The frequency of Urease positivity was significantly higher in patients with erosive bulbitis, bulbar ulcer and gastric ulcer, but lower in patients with only gastritis. Endoscopic findings and H.pylori positivity rates were summarized in Table 2.

H. pylori positivity was 52% in patients born in Trakya, 56.3% in immigrants from Anatolia and 48.7% in immigrants from Europe (Table 3). Statistically significant differences were observed regarding the origin of the patients and the urease positivity rates ($p=0.02$).

The patients included in this study were also grouped according to their occupation and analysed for a possible relation with their Urease positivity. Urease positivity showed no statistical significance, although it was observed to be higher in officers, labourers, housewives, unemployed individuals, farmers and medical staff. In

Table 1. H. pylori infection rate in age groups

		H. pylori (-)		H. pylori (+)	
		n	%	n	%
Age groups	<30	245	47.5	271	52.5
	30-60	1150	44.1	1456	55.9
	>60	820	52.4	746	47.6
	Total	2215	47.2	2473	52.8

Table 2. H. pylori infection rates and endoscopic diagnosis

Endoscopic diagnosis	n	%	H. pylori status		Positive%	Chi-square	p
			Positive	Negative			
Gastritis	3297	69.9	1596	1701	48.4	83.3	<0.001
Erosive bulbitis	362	7.7	221	141	61	10.8	0.001
Bulbar ulcer	723	15.3	470	253	65	51.4	<0.001
Gastric ulcer	332	7	200	132	60.2	8.02	0.005
Total	4714	100	2487	2227	52.8		

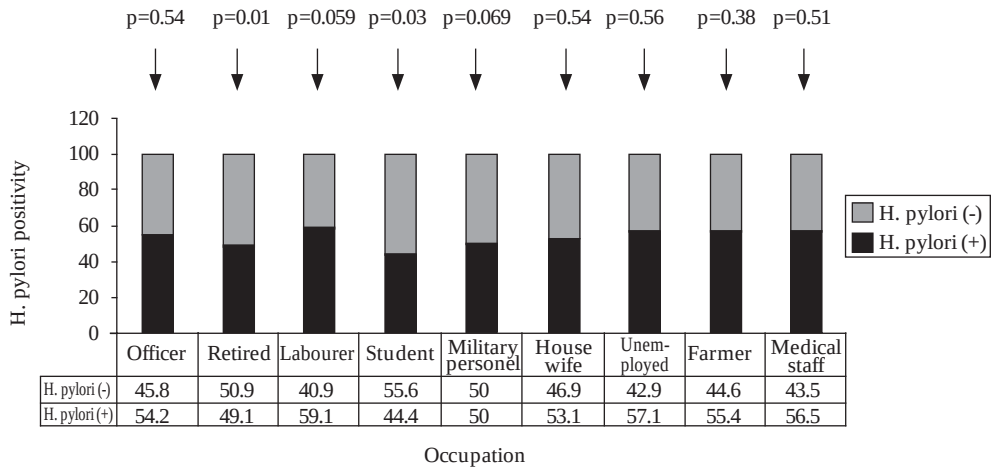

Figure 1. *Helicobacter pylori infection and occupations.*

the retired individuals and students, Urease positivity rates were much lower (for students, Urease positivity: 44.4%, p=0.03 and for retired individuals urease positivity: 49.1%, p=0.01) (Figure 1).

DISCUSSION

The evaluation of urease activity in an endoscopic biopsy specimen is used worldwide to determine the presence of infection with H. pylori. Sensitivity and specificity are suggested to be 98% and 97% respectively. The Clo test and cheaper "home made" urease tests show similar sensitivity and specifity. Furthermore, the sensitivity of the urease test is often higher than other biopsy-based methods, because the entire biopsy sample is placed in the media.

Table 3. H. pylori infection and patient's origin

	Origin						
	Born in Trakya		Immigrant from		Immigrant from		
Urease			Anatolia		Europe*		Total
	n	%	n	%	n	%	
Positive	1759	52	571	56.3	132	48.7	2207
Negative	1624	48	444	43.7	139	51.3	2462

Chi-square=7.55, p=0.02

*Mostly immıgrant from Greece, Bulgaria and Romania

The prevalence of H. pylori infection varies strongly within nations, with less than 40% prevalence in developed countries, and over 80-90% in developing countries.[19-21] H. pylori infection is thought to be acquired at an earlier age in developing countries compared to industrialized nations.[8] Once acquired, infection persists and may lead to certain gastroduodenal diseases. Helicobacter pylori is implicated in the etiology of gastric and duodenal ulcer, non-ulcer dyspepsia, atrophic gastritis, gastric adenocarcinoma and lymphoma. The risk of acquiring H. pylori infection is related to socioeconomic status and living conditions in early life. Therefore, variations may be observed in the prevelances studied in different regions with different socioeconomic statuses in developed and developing countries. Likewise, variations have been observed at different time periods in the same country. Ozden et al. from Turkey have reported that the prevalence of Helicobacter pylori has been found to be decreasing over a time span of 10 years. They have reported the overall prevalence of Helicobacter pylori antibodies to be 78.5% in 1990 and 66.3% in 2000 and related this decrease to the improvement in the environmental factors and the socioeconomical structure of Turkey.[18] Although the detection methods of H. pylori in our study has been different, the low overall prevalance of H. pylori (52.8) may be related to certain factors, including the probability of higher socioeconomic status in the Trakya region, being

located on the western border of Turkey, in Continental Europe, as well as the progression of the decrease in the H. pylori prevalance itself.

In a study performed in Greece, a neighbour of the Trakya region, it has been suggested that the H.pylori prevalance in 1987 was 59.5% and in 1997 49.2%, which supports our theory.[19] In a study from Bulgaria, another neighbour of the Trakya region, H. pylori has been isolated with the urease test and histopathology and the prevalance has been reported as 42.3% in patients with chronic gastritis, 64.7% in patients with duodenal ulcer, with an overall prevalance as 44.5%.[20] These data suggested that the epidemiologic pattern of H. pylori in our region may be concordant with Eastern Europe rather than Middle Anatolia.

H. pylori infection is strongly associated with peptic ulcer disease of the duodenum and stomach. Indeed, early studies have suggested that almost all duodenal ulcers and the large majority of gastric ulcers were associated with H. pylori infection. Recent studies have suggested that these early estimates were somewhat exaggerated. In our study, H. pylori positivity has been found to be 65% in patients with bulbar ulcer and 60.2% in patients with gastric ulcer. Since our study was retrospective, possible factors, including the use of NSAI drugs, antibiotics and proton pump inhibitors, would have erroneously contributed to this lower prevelance of H. pylori in peptic ulcer disease. For this reason, in this study, detailed medical history have been obtained, including previous use of drugs.

As a result, the prevalence of H. pylori infection in Trakya region has been found to be lower than the other regions of Turkey also partaking in the results of Europe. These could be explained by the socioeconomic status of the region as well as migrations from Europe.

Conflict of Interest

No conflict of interest declared by the authors.

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