THE PREVALENCE AND ENDOSCOPIC DIAGNOSIS OF HELICOBACTER PYLORI FOR THE ENTIRE SOCIETY AND CONSTABLES

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ABSTRACT

Introduction*: This study aimed to analyze the prevalence of Helicobacter pylori and its relationship with age and sex through endoscopic diagnosis results of the general population and constables of İstanbul, Turkey.*

Materials and methods*: A retrospective analysis was performed for 14,500 patients' biopsy results taken from the antrum and corpus during gastroscopies for various reasons.*

Results*: In 10,266 (70.8%) of the 14,500 patients that underwent gastroscopic antrum and corpus biopsies, there was a positive result for Helicobacter pylori (70.8%). Helicobacter pylori was more prevalent in constables (72%). The difference between age groups for the general population and the constables was significant for Helicobacter pylori positivity ($p < 0.001$). For constables, there was a difference between the sexes for Helicobacter pylori prevalence ($p = 0.002$), whereas other patients had no significant difference ($p = 0.238$). Constables had higher prevalences for gastritis ($p = 0.001$), gastric ulcers ($p < 0.001$), duodenal ulcers ($p < 0.001$), and esophagitis ($p < 0.001$) than non-constables.*

Conclusion*: Helicobacter pylori prevalence for endoscopic antrum and corpus biopsies of the general population was 70.8%. The Helicobacter pylori prevalence for constables was higher than the other segments of this society. Age was determined to be a significant variable both among constables and the general population, however, sex differences were only evident for the constables.*

Key words*: Helicobacter pylori, peptic ulcer, esophagitis, prevalence, police personnel.*

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Introduction

Helicobacter pylori (H.pylori) is the most common infection worldwide. Approximately 20-50% of the Western world, and 80% of developing countries suffer from H.pylori infections. Furthermore, 30% of children and 50-60% of adults are infected with H.pylori worldwide. H.pylori is a risk factor for active gastritis, peptic ulcers, mucosa-associated lymphoid tissue lymphoma (MALToma), and gastric cancer[(1)]. All of those infected with these bacteria suffer from gastritis. The risk of contracting peptic ulcers for those infected with H.pylori is 15%, while the risk for gastric cancer is 0.1-1%, and the risk for gastric lymphoma is 0.01-0.1%. Approximately one million people a year lose their lives due to H.pylori-borne diseases. H.pylori is an etiological factor in 95% of duodenal ulcer cases, and 80-85% of gastric ulcer cases[(2)].

The prevalence of H.pylori in Turkey is similar to that in developing countries. However, the prevalence of H.pylori for the entire country is not precisely known, even though individual studies state the opposite. The results of epidemiological studies for H.pylori have been contradictory in Turkey. This is because the study methods vary and the prevalence of H.pylori varies by regions and over time. The study aimed to analyze the prevalence of H.pylori and its relationships with age and sex in constables and non-constable patients. To do this, we examined and compared the results from

gastroscopic biopsies taken at the İstanbul Police Hospital.

Materials and methods

We retrospectively analyzed patients that had undergone gastroscopies with antrum and corpus biopsies for any reason between 2000 and 2006 at the İstanbul Police Hospital, Department of Gastroenterology. We then continued with this data collection for patients between 2006 and 2013 at the Uskudar Public Hospital, Department of Gastroenterology Endoscopy. Two hospitals are the same, but with different names.

A total of 14,542 patients' gastroscopy reports were analyzed. Of these, 14,500 of the patients that underwent antrum and corpus biopsies were included in this study. The procedures for all of the analyzed reports were conducted by experienced gastroenterologist. The analyses focused on the Z band, cardia, fundus, corpus, antrum, pylorus, bulbus, and the second part of duodenum. The findings pertaining to constables that underwent gastroscopy between 2000 and 2006 at the İstanbul Police Hospital, and the gastroscopy results of non constable and constable patients between 2006 and 2013 at the Uskudar Public Hospital were compared. The prevalence of H. pylori, the relationship of this prevalence with age and sex, and the gastroscopy diagnosis results were analyzed for the gastroscopic antrum and corpus biopsies from all patients. Both the constables and the general population group were similarly evaluated.

Hematoxylin and eosin as well as modified Giemsa staining techniques were employed for the histological diagnosis of the gastroscopic biopsies. Gastroscopic biopsy specimens were analyzed using light microscopy. Bacteria in the specimens were reported to have mild (+), moderate (++), or severe (+++) positivity by intensity.

Categorical variables were displayed by frequency and percentage. Pearson's chi squared tests were used for comparison of groups in terms of categorical variables. All statistical comparisons were considered statistically significant with a p value < 0.05.

Results

A positive result for H. pylori was seen in 10,266 (70.8%) patients, whereas 4,234 (29.2%) patients proved to be negative. Of the total sample of patients, 8,230 (56.7%) were men and 6,270 (43.2%) were women.

Of those patients who tested positive for H. pylori, their positivity was rated as mild, moderate, or severe positivity in 66%, 26%, and 8% of all patients, respectively.

From the 6,270 women, 4,407 (70.3%) were diagnosed as positive for H.pylori, while 5,859 (71.2%) of the 8,230 men were diagnosed with H.pylori. This difference between the two sexes for H.pylori prevalence was not significant ($p = 0.238$).

The entire study group was divided into four age groups and analyzed for H. pylori positivity by age group. The prevalence of H. pylori for the age groups of ≤ 30 years, 31-45 years, 46-60 years, and ≥ 61 years was 73.1%, 71.5%, 70.5%, and 68.6%, respectively. The difference between age groups for H. pylori positivity was statistically significant ($p < 0.001$). These results are displayed in Table 1.

Ages(years)	Hp - (Number of patients)	Hp+ (Number of patients)	Total
30 and below	758 (26.8%)	2068 (73.1%)	2826
31-45	1099 (28.4%)	2768 (71.5%)	3867
46-60	1060 (29.4%)	2540 (70.5%)	3600
61 and above	1317 (31.3%)	2890 (68.6%)	4207
Total	4234	10266	14500

Table 1: The difference between age groups of constables with H. pylori positivity. .
Hp: Helicobacter pylori

There were 5,013(72.0%) of the 6,962 constable patients, and 5,253 (69,7%) of the 7,538 non-constable patients that were positive for H.pylori. The percentage of constables testing positive for H.pylori was significantly higher than for those in the non-constable group ($p=0.002$).

The difference between age groups of the constables with H. pylori positivity was statistically significant ($p = 0.025$) (Table 2). With regard to sex differences, there were 4,702 (71.7%) positive and 1,860 (28.3%) negative H. pylori cases among male constables, while there were 311 (77.8%) positive and 89 (22.3%) negative H. pylori cases among female constables. This sex difference for H. pylori positivity was statistically significant ($p = 0.008$).

The prevalence of esophagitis ($p < 0.001$), gastritis ($p = 0.001$), gastric ulcer ($p < 0.001$), and duodenal ulcer ($p < 0.001$) for constables was significantly higher than for non-constable patients. However, there were no differences in terms of

prevalence for esophageal cancer, esophageal varices, gastric cancer, and duodenitis (Table 3).

Ages(years)	Hp- (Number of patients)	Hp+ (Numberof patients)	Total
30 and below	345 (25.5%)	1007 (74.5%)	1352
31-45 YAŞ	507 (27.2%)	1355 (72.8%)	1862
46-60 YAŞ	486 (28.2%)	1237 (71.8%)	1723
61 and above	611 (30.2%)	1414 (69.8%)	2025
Total	1949	5013	6962

Table 2: The difference between the age groups for H. pylori positivity.
Hp: Helicobacter pylori

Endoscopic diagnosis results	Constables	Non-constable patients	p
(Upper gastrointestinal)	n=9825	n=8944	
Esophagitis	938 (9.5%)	663 (7.4%)	<0,001
Esophagus malignancies	34 (0.3%)	26 (0.3%)	0,335
Esophagus varices	56 (0.6%)	64 (0.7%)	0,420
Gastritis	5052 (51.4%)	4984 (55.8%)	0,948
Gastric ulcer	501 (5.1%)	274 (3.1%)	<0,001
Gastric malignancies	48 (0.5%)	56 (0.5%)	0,392
Duodenitis	156 (1.6%)	142 (1.6%)	0,515
Duodenal ulcer	760 (7.7%)	418 (4.7%)	<0,001
Other diseases	194 (2.0%)	264 (3.0%)	0,001
Normal diagnosis	2086 (21.2%)	2053 (23.0%)	-

Table 3: Distribution of endoscopic findings in patients.

Discussion

The prevalence and incidence of H. pylori in the gastric mucosa vary by the country's development level and the subject's age. More than 50% of the world's population is considered to be currently infected with H. pylori. The prevalence is 5-10% in developed countries, however, this may amount to 70-90%, and even as high as 100%, for some age groups in underdeveloped or developing countries[3,4,5].

The most comprehensive study concerning the prevalence and risk factors of H. pylori for adults in Turkey was carried out by the TURHEP (A study of the prevalence and risk factors of H.pylori infection in Turkey) study in 2003[6]. In this study, 2,504 households representing the entire Turkish population were chosen as a sample group, and 92% of these were interviewed. In all, 5,555 people over the age of 18 years and residing in households were considered fit for this study that was completed by 99.9% of the participants. The prevalence of H. pylori, as detected by 13C-urea breath tests, for adults over 18 years was 82.5% according to this study. The prevalence was 84% for men and 81% for women. The prevalence of H. pylori identified with serum anti-H. pylori immunoglobulin G by means of ELISA techniques for asymptomatic adults ranged from 53-82%. The studies determining H. pylori positivity for selected groups of patients by invasive methods were reported to be 41-96%[6]. This study found that the prevalence of H. pylori for adults was higher than Western countries and compatible with Turkey.

Studies by Acik et al. (2003) and Uyanikoglu et al. (2010) reported that sex had no impact on H. pylori positivity[7,8]. Murray et al. obtained the same result(9). Özaydın et al. reported that the prevalence of H. pylori infections was higher for men in Turkey. This argument was corroborated by studies carried out in the United States, the United Kingdom, Ireland, Spain, and Chile. A study carried out in Israel points to an increase in H. pylori prevalence for women that smoke. The fact that some young men have certain risk factors such as poor hygiene, spending a lot of time outside the home, and being prone to smoking and alcohol consumption can point to possible difference between the sexes. However, there is little agreement on this subject[10]. For the current study, sex was not significant in terms of H. pylori infections for the entire study population. However, the difference between male and female constables for H. pylori positivity was statistically significant. This suggests that the risk factors pointing to the increased prevalence of H. pylori for female constables may not be applied to this occupation.

Various publications have reported contradictory results pertaining to the relationship between age groups and H. pylori. The studies by Acik et al. (2003) and Uyanikoglu et al. (2010) reported no differences between age groups[7,8]. The TURHEP study carried out in Turkey reported that the preva-

lence of H. pylori is highest for the age group of 30-39 years, and the lowest for the age group of 70 years and older. Various studies have reported that H. pylori positivity increases as people age[11,12]. Megraud's study reported that the increase in atrophic gastritis incidence in an advanced age results in a loss of the ecological nest for H. pylori, resulting in a decreased prevalence[13]. The current study detected a significant difference between age groups for constables and the study's overall population.

The prevalence of H. pylori for constables that underwent endoscopy was 72%. H. pylori was more prevalent for constables than for the general population. Gastritis, gastric ulcers, duodenal ulcers, and esophagitis were more prevalent according to the distribution of endoscopic diagnoses. The fact that the prevalence of H. pylori is higher for constables than for the general population may point to the increasing prevalence of gastritis and peptic ulcers. Nonsteroidal anti-inflammatory drugs (NSAIDs), smoking, alcohol consumption, stressful lifestyles, and dietary factors may play a role in the pathogenesis of peptic ulcers for H. pylori. Emotional factors have an impact on gastric secretion, and gastric motor functions. They increase gastric acid secretion. They also give rise to distinct increases in levels of serum gastrin and pepsinogen. Stress and emotional factors are at a high level for constables[15-17]. Additionally, peptic ulcers are prevalent when it comes to occupations with shifts[18]. Work-related stress may also lead to a greater prevalence for gastroesophageal reflux esophagitis[19].

Conclusion

It is striking that the prevalence of H. pylori is higher for constables, even though it is compatible with the literature. In spite of differing H. pylori positivity for constables and non-constable patients as they age, sex is a differing factor only for constables. The prevalence of gastritis, peptic ulcers, and gastroesophageal reflux is higher for constables. In addition to having a higher prevalence of H. pylori for constables, we think that emotional factors and lifestyles are likely to increase the prevalence of gastritis, peptic ulcers, and gastroesophageal reflux. Additional studies should be performed to examine the reasons behind the increased prevalence of H. pylori for female constables, and why there is an increased prevalence of gastritis, gastric ulcers, duodenal ulcers, and esophagitis for constables. We are of the opinion that further studies are required on the impact of an increased H. pylori prevalence for constables who may be prone to smoking, alcohol consumption, NSAIDs, stressful life events, poor dietary habits, and comorbid diseases.

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