

Features of Endoscopic and Histopathological Findings of The Gastrointestinal Tract In Patients With Blepharitis

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ABSTRACT

Helicobacter pylori (H pylori) leads to gastric diseases as well as causing many extra-gastric involvements. Although contradictory findings are reported in some studies; it is indicated that some eye-related diseases are linked to H pylori. In our study, we aimed at investigating the relationship between presence of blepharitis and H Pylori positivity.

Demographic data, drug, smoking and alcohol use, endoscopic, histological findings and presence of blepharitis were documented. Endoscopic and histopathological findings are compared between patients with blepharitis and control group. The data is analysed statistically. Values with $p < 0.05$ were considered significant.

36 patients with blepharitis and 84 patients without blepharitis were included in the study. Presence of *Helicobacter pylori* was found significantly in higher rate at patients with blepharitis. Esophagitis, gastric ulcer and bulbitis were found significantly in higher rate at patients with blepharitis. There is no difference between the groups in terms of other endoscopic findings.

While causing gastro duodenal diseases, particularly peptic ulcer and stomach adenocarcinoma by interaction between bacterial virulence factors and host and/or environmental factors, H pylori is known to be related to many extra-gastric involvements. Thus, in the presence of eye diseases such as blepharitis, we consider that; it is necessary to investigate presence of H pylori and treatment shall be done when positivity is detected.

Keywords: Blepharitis; *Helicobacter pylori*; endoscopy

Introduction

Helicobacter pylori (H pylori) is a gram negative, spiral shaped and flagellate bacteria which infects almost half of the world population. Its prevalence varies based on; geographical regions, age and ethnicity where it is more commonly seen in poor and developing countries (1-3). Contamination of the infection is conducted through oral-faecal routes (4). Besides, bacteria are observed in saliva and dental plaques. That finding suggests that, it can also infect thorough oral-oral routes. (5). H pylori infection is the main reason of chronic gastric and peptic ulcer disease (2,4,5). In the result of stimulating stomach cell proliferation before balancing apoptosis, it leads

to stomach adenocarcinoma and stomach mucosa linked lymphatic tissue (MALT) lymphoma (4,5).

Reason for H pylori infection to cause different clinical results is not known clear. Genetical features, environmental factors and some bacterial factors belong to the host are known to play a significant role (6). H pylori infection leads to gastric diseases as well as causing many extra-gastric involvement (6,7). Relationship between H pylori infection and extra-gastric diseases is reported first time by Mendalet al. in 1994 (6,7). Today, it is known that H pylori linked; neurological, dermatological, haematological, ocular, cardiovascular, metabolic and allergic diseases can develop (5-7).

Although contradictory findings are reported in some studies, it is indicated that; diseases such as

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open-angle glaucoma, central serous chorioretinitis and blepharitis are linked to H pylori (8-10). In our study, we aimed to investigate the relationship between the presence of blepharitis and esophagogastroduodenoscopy, gastric histopathology and H. Pylori positivity in patients diagnosed with blepharitis.

Materials and Methods

Study Design: In this study, 120 patients are included in our study that are; observed by endoscopy for upper gastrointestinal tract (GIS) due to dyspeptic complaints that are examined in eye diseases polyclinic of our hospital between June 2021 and September 2021. Our study is designed retrospectively. Patients that are; pregnant, undergone organ transplantation (liver, kidney, bone marrow), having chronic liver and chronic kidney diseases as well as the patients to undergone GIS linked operations are not included in this study. Data regarding; demographical features (age, gender), treatments received (non-steroid anti-inflammatory drugs), smoking and alcohol intake about the patients are documented. Equal distribution of factors such as; smoking, alcohol intake, drugs used as well as demographic features that may affect the gastrointestinal track is observed.

Endoscopic Evaluation: Endoscopic findings and histopathological data of the patients were documented. The endoscopy of the patients is performed by using the Fujinon EG530WR endoscopy device in the endoscopy unit of our hospital. All patients starved for 6 hours before the endoscopy. After the local pharyngeal xylocaine anaesthesia, the endoscopy procedure is performed. The stomach and duodenum is examined in detail during the endoscopy, and biopsies were taken for helicobacter pylori infection. The difference between endoscopic findings and histopathological findings are evaluated between patients with hypothyroidism and patients without hypothyroidism.

Histopathological Evaluation: Punch biopsy is taken from the antrum of the patients who undergone endoscopic evaluations using biopsy forceps. The biopsy materials taken are sent to the pathology laboratory in 10% formaldehyde. After routine tissue monitoring procedures, tissue samples embedded in paraffin are cut at 5 micron thickness, stained with routine Giemsa and evaluated under a light microscope. Samples without tissue competence for evaluation are

excluded from the study. The materials obtained were evaluated by three different experienced pathologists without clinical information. An evaluation is made for the presence of HP in the tissue.

Ethical Statement: Ethical approval for this study is obtained from the Ethics Committee of our hospital (Approval no: 07/01/2021/2021-01). All procedures are in accordance with the ethical standards of our institution's human experiment committee and the Helsinki Declaration.

Statistical Analysis: The results of our study are analysed with the program called; "The Statistical Package for the Social Sciences 19.0 (SPSS Armonk, NY: IBM Corp.)". Data with continuous values are given as mean $\pm$ standard deviation, categorical data as frequency and percentage (n,%). Parametric data of the groups are compared using the Student T test, and Chi-square test is used to test categorical data. The cases with $p < 0.05$ are considered statistically significant.

Results

In this study, 120 patients are included where; 34 patients are diagnosed with blepharitis in which 16 (44.4%) are woman, as wells as 84 patients that are not diagnosed with blepharitis in which 49 (58.3%) are woman. No significant difference is found ($p > 0.05$) in comparison conducted between patients with or without blepharitis in terms of; demographical features, drugs used smoking and alcohol intake (Table 1).

In the comparison conducted between the groups in terms of endoscopic data; esophagitis, gastric ulcer and bulbitis are found significantly higher in patients' group with blepharitis ($p < 0.05$). Prevalence of esophagitis in patient group with blepharitis is found to be 22.2% where the same is found in patient group without blepharitis as 7.1% ($p: 0.018$). Prevalence of gastric ulcer in patient group with blepharitis is found to be 16.7% where the same is found in patient group without blepharitis as 1.2% ($p: 0.001$). Prevalence of bulbitis in patient group with blepharitis is found to be 16.7% where the same is found in patient group without blepharitis as 4.8% ($p: 0.031$) (Table 2). According to comparison between groups regarding histopathological data, prevalence of H. pylori is found significantly higher in patient group with blepharitis. Prevalence of H. pylori in patient group with blepharitis is found to be 70.6% whereas prevalence of esophagitis is found to be 42.9% in

Table 1: Comparison of Demographic Characteristics and Drug Use of Patients With and Without Blepharitis

Drugs and demographic features	Patients with Blepharitis (n:36)	Patients without Blepharitis (n:84)	Total n:120	p value
Age (Year $\pm$ SD, range)	39.8 $\pm$ 12.1 (22-62)	43.2 $\pm$ 14.3 (18-65)	40.8 $\pm$ 12.8 (18-65)	0.178
Sex (Female)	16 (44.4%)	49 (58.3%)	65 (54.2%)	0.162
Smoker	6 (16.7%)	24 (28.6%)	30 (25.0%)	0.168
Alcohol user	5 (13.9%)	10 (11.9%)	15 (12.5%)	0.763
NSAID	20 (55.6%)	58 (69.0%)	78 (65.0%)	0.156

SD: Standard deviation. **NSAID:** Non-steroidal anti-inflammatory drugs

Table 2: Comparison of Endoscopic and Histopathological Findings of Patients With and Without Blepharitis

Endoscopic findings	Patients with Blepharitis (n:36)	Patients without Blepharitis (n:84)	Total n:120	p value
Antral gastritis (n, %)	8 (22.2%)	24 (28.6%)	32 (26.7%)	0.471
Pangastritis (n, %)	28 (77.8%)	54 (64.3%)	82 (68.3%)	0.145
Esophagitis (n, %)	8 (22.2%)	6 (7.1%)	14 (11.7%)	0.018*
Gastric ulcer (n, %)	6 (16.7%)	1 (1.2%)	7 (5.8%)	0.001*
Duodenal ulcer (n, %)	2 (5.6%)	4 (4.8%)	6 (5.0%)	0.855
Bulbitis (n, %)	6 (16.7%)	4 (4.8%)	10 (8.3%)	0.031*
Hiatal hernia (n, %)	2 (5.6%)	2 (2.4%)	4 (3.3%)	0.375
LES disfunction (n, %)	6 (16.7%)	12 (14.3%)	18 (15.0%)	0.738
Alkaline reflux (n, %)	2 (5.6%)	4 (4.8%)	6 (5.0%)	0.855
Barret metaplasia (n, %)	2 (5.6%)	2 (2.4%)	4 (3.3%)	0.375
Atrophic gastritis (n, %)	1 (2.8%)	6 (7.1%)	7 (5.8%)	0.350
H.P (n, %)	24 (70.6%)	33 (42.9%)	57 (51.4%)	0.007*

LES: Lower esophageal sphincter, **HP:** Helicobacter pylori

patient group without blepharitis (p: 0.007) (Table 2).

Discussion

H pylori can cause many diseases in gastrointestinal track Apart from that, by the means of H pylori linked cytokine and cytotoxins, it can cause many extra-gastric diseases such; cardiovascular, hepatobiliary, hematologic, dermatologic and immunologic disease as well as eye involvement. It may lead to eye involvement as well as blepharitis, glaucoma and chorioretinitis (11).

In patients with blepharitis, focal or prevalent inflammation occurs around eye-lid borders and orifices of meibomian glands. Many etiological factors such as; excessive irritating allergens, staphylococcus infection as well as rosacea play a role. Apart from that, there are studies indicating significant

relationship between H pylori infection and blepharitis (5,12). Eye-lid inflammation to develop due to H pylori infection can be explained in some mechanisms. Firstly, H pylori produce strong vasodilators such as nitric acid and gastrin. Accordingly, together with inflammation at face and neck, vasodilation occurs at eye-lids and conjunctivitis which can trigger a chronic inflammation. Secondly, it can affect extra-digestive organs through cross-mimicry mechanism between bacteria and extra-digestive antigens in the result of a secondary size of inflammatory mediator release to H pylori infection. Thirdly, H pylori that is shown to exist in oral environment is thought to reach the front part of the eye from oral cavity and cause blepharitis (13).

In the analyses made by Nobalet al. on 186 blepharitis patients, it is found out that; blepharitis is more severe at patients with H pylori and healing is observed at half of the patients that are undergone H

pylori eradication treatment (14). In the study conducted by Vardhan et al., blepharitis is found out of 14% of H pylori positive patients where the same is found only out of 4% of H pylori negative patients (15). Similarly, Sacca et al. determined H pylori frequency as 76.3 % in patients with blepharitis where the same is found as 42.3 % in control group patients without blepharitis (13). Beside these, significant relationship between H pylori infection and blepharitis is reported in many studies (16-19). Similar to the results found in the literature, significant relationship between H pylori infection and blepharitis development is found in our study. Prevalence of H pylori in patient group with blepharitis is found to be 70.6% whereas prevalence of H pylori in patient group without blepharitis is found to be only 42.9%.

There are strengths and weaknesses of our study. Weakness of our study is; the number of patients is less and it is designed retrospectively. Applying endoscopic and histopathologic examination to all our patients, detecting presence of H pylori by endoscopy, making comparison of endoscopic and histologic data between patients with and without blepharitis are the strengths of our study.

While causing gastro duodenal diseases, particularly peptic ulcer and stomach adenocarcinoma by interaction between bacterial virulence factors and host and / or environmental factors, H pylori is known to be related to many extra-gastric involvements. Thus, apart from gastro-duodenal diseases, it is recommended to treat H pylori infection in; idiopathic iron deficiency anemia, immune thrombocytopenia and B12 deficiency. Considering the fact that H pylori infection causes eye involvement frequently, in the presence of eye disease, we believe that; H pylori presence shall be investigated, and it shall be treated if it is found positive.

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