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Role of *Helicobacter pylori* in Rosacea

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ABSTRACT

Objective: Rosacea is a chronic, inflammatory skin disease. The etiology is not known exactly, and natural immunity, impaired dermal matrix, vasodilation, and fibrogenesis may play a role in the pathogenesis of rosacea. Many studies investigated the relationship between rosacea and *Helicobacter pylori* (HP) but the results were contradictory.

Methods: Patients were retrospectively identified from those treated by the Department of Dermatology. A total of 47 rosacea patients and 27 healthy controls were included in the study. *Helicobacter pylori* (Hp Ag), Helicobacter pylori immunoglobulin A (Hp IgA), and *Helicobacter pylori* immunoglobulin G (Hp IgG) were investigated and statistically compared in groups.

Results: There was statistically no difference between the groups in terms of Hp Ag positivity (p=0.871), Hp IgA positivity (p=0.806), and Hp IgG positivity (p=0.330).

Conclusions: Although we did not observe any difference between groups, we were unable to evaluate whether there is a reduction in symptoms with HP eradication. Further studies are needed to clarify the relation between HP infections with rosacea and other dermatological disorders.

Keywords: Rosacea, *Helicobacter pylori, Helicobacter pylori* antigen (Hp Ag), *Helicobacter pylori* antibody (Hp Ab)

Introduction

Rosacea is a chronic inflammatory skin disease. In this condition, clinically transient or persistent facial erythema, inflammatory papule and pustules, telangiectasias, a burning or stinging sensation, erythematous plaques, dryness, squames, edema, phymatous changes, and ocular involvement can occur (1).

Although its cause is not exactly known, it is thought that natural immunity, impaired dermal matrix, vasodilatation, and fibrogenesis can play a role in its pathogenesis (2).

There have been many studies conducted examining the relationship between *Helicobacter pylori* (H. pylori) and rosacea. In some of them, it was reported that the symptoms of patients with rosacea improved with the eradication of the *H. Pylori* infection (3).

In our study, the *H. Pylori* seropositivity and the relationship that the clinical sub-types have with this infection were investigated in patients with rosacea.

Methods

In this study, patients diagnosed with rosacea who were followed up in the outpatient Clinic of Dermatology in our hospital were scanned retrospectively. Because the study was retrospective, written informed consent was not required, and it was not obtained from the patients. The study was conducted in accordance with the Declaration of Helsinki (1964), which was amended in Sommerset West in 1996.

Patients diagnosed with rosacea were selected as the study group, and healthy individuals were selected as the control group. The study included patients who were clinically diagnosed with rosacea. The patients were classified as Type 1

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(erythematotelangiectatic rosacea), Type 2 (papulopustular rosacea), Type 3 (phymatous rosacea), and Type 4 (ocular rosacea). Patients who were pregnant, breastfeeding, and using medications were excluded from the study. The *H. Pylori* antigen (Hp Ag), *H. Pylori* immunoglobulin A (Hp Ig A), and *H. Pylori* immunoglobulin G (Hp Ig G) positivity was investigated in the patient and control groups.

Statistical Analysis

The patient and control groups were statistically compared. Statistical analysis was performed using the χ^2 test. The p-value of <0.05 was accepted to be statistically significant.

Results

The study included 47 patients and 27 healthy controls. Of 47 patients, 13 (27.7%) were male, and 34 (72.3%) were female. Of 27 controls, 9 (33.3%) were male and 18 (66.7%) were female. There was no significant difference between the patient and control groups in terms of gender (p=0.609). The mean age was 43±12.90 years in the study group, and 40±8.88 years in the control group, and no statistically significant difference was found between the two groups in terms of age (p=0.067). Whereas the Hp Ag was positive in 13 (27.7%) patients in the study group, it was positive in 7 (25.9%) individuals in the control group. There was no significant difference detected between the two groups with regard to the Hp Ag positivity (p=0.871).

Whereas Hp IgA was positive in 20 (42.6%) patients in the study group, it was positive in 10 (37.0%) patients in the control group. There was no statistically significant difference between the groups in terms of the Hp IgA positivity (p=0.806).

Helicobacter pylori immunoglobulin G (Hp IgG) was positive in 25 (53.2%) patients in the study group; however, it was positive in 18 (66.7%) patients in the control group. In terms of Hp IgG positivity, no significant difference was observed between the two groups (p=0.330).

Of the patients, 19 (40.4%) had Type 1 (erythematotelangiectatic rosacea), 21 (44.7%) had Type 2 (papulopustular rosacea), 5 (10.6%) had Type 3 (phymatous rosacea), and 2 (4.3%) had Type 4 (ocular rosacea). Among the subtypes of rosacea, no statistically significant difference was found in terms of the Hp Ag, Hp IgA, and Hp IgG seropositivity.

Discussion

Rosacea is one of the most frequently seen skin diseases. It is a chronic inflammatory condition. In general, it is commonly encountered in adults older than 30 years (4).

This disease has various clinical types. In 2002, the National Rosacea Society Expert Committee developed a classification and staging system for the diagnosis of the disease and approach to the disease (5). According to this classification, the disease of rosacea was divided into four sub-types and one variant type. Type 1 (erythematotelangiectatic rosacea) is primarily characterized by flushing and permanent central erythema on the face. Type 2 (papulopustular rosacea) is characterized by persistent central facial erythema and temporary papules/pustules. Type 3 (phymatous rosacea) is defined as the skin thickened by irregular nodules, and Type 4 as ocular rosacea. On the other hand, granulomatous rosacea is defined as a variant, and it is characterized by sclerotic papules/nodules. While it is seen in women more commonly, Type 3 is more frequent in men (5).

Fair skin, exposure to sun, and familial history are the risk factors for the disease. In addition, alcohol and coffee consumption, exposure to hot weather, exercising, smoking, and consumption of spicy food are the factors exacerbating the disease. There are studies demonstrating that various infections and infestations such as *Demodex folliculorum* and *brevis*, *Staphylococcus epidermidis*, and *H. pylori* may also have a role in the etiopathogenesis of the disease (6).

Helicobacter pylori is a gram-positive, microaerophilic, and spiral bacterium, and it colonizes in the gastric mucosa, inducing inflammation there. More than 50% of the world population is infected by *H. pylori*, but most of individuals are asymptomatic (7). *H. Pylori* is known to have a relationship with chronic active gastritis, peptic ulcer, primary low-grade (B-cell) gastric lymphoma (mucosa-associated lymphoid tissue lymphoma), and gastric adenocarcinoma (8). In addition to gastrointestinal system diseases, a relationship between *H. Pylori* and cardiovascular, neurological, respiratory, immunological, and dermatological diseases has been reported (9, 10). Some studies have demonstrated that *H. Pylori*-associated dermatological diseases include psoriasis, Behçet's disease, alopecia areata, Henoch-Schönlein purpura, and Sweet syndrome, as well as chronic urticaria and rosacea (11).

Despite the many studies examining the relationship between *H. Pylori* and rosacea, there are also some contradictory results. The first study about the relationship between rosacea and *H. Pylori* was conducted by Rebora et al. (12). On the other hand, in the studies performed in the following years, different results have been reported.

In a study conducted by Utaş et al. (13), patients with rosacea were evaluated in terms of HP IgA and IgG, and no difference was found between the control group and the rosacea group in terms of the *H. Pylori* seropositivity. On the other hand, a decrease was reported in the severity of the disease with the administration of *H. Pylori* eradication treatment. Similar results were reported in a study performed by Szlachcic in 2002, and non-regression of cutaneous symptoms with *H. Pylori* eradication was attributed to the localization of *H. Pylori* in the oral cavity (14).

In our study, similar to the study of Utaş et al. (13), there was no significant difference found between the patients with

rosacea and controls in terms of the Hp IgA and IgG seropositivity. Moreover, there was no statistically significant difference between the two groups with regard to HP Ag.

Although the role of *H. Pylori* eradication in the treatment and clinic of rosacea was demonstrated in the studies by Utaş et al. (13) and Szlachcic (14), its role in the etiopathogenesis of patients is not exactly known. While no relationship was detected between *H. Pylori* and clinical sub-types of rosacea in our study, *H. Pylori* eradication has been reported to be effective in Type 1 in literature (15). Contradictory results of the studies cause the relationship between *H. Pylori* and rosacea to remain a mystery.

Conclusion

Although the *H. Pylori* prevalence in patients with rosacea was not found to be different from the prevalence in the control group, any regression in the symptoms with *H. Pylori* eradication could not be evaluated in our study. Further studies should be performed to investigate the relationship between *H. Pylori* and rosacea and other dermatological diseases.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Bezmialem University School of Medicine (Number: 54022451-050.05.04).

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