

## ORIGINAL ARTICLE

# Dermatological Diseases in Patients with *H. pylori* Infection: Frequency and Impact of Treatment

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## ABSTRACT

**Keyword:** Dermatological diseases, *H. Pylori*, dermatitis.

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**Background:** *H. Pylori* is considered a causative agent of chronic gastritis, peptic ulcer and non-cardia adenocarcinoma of the stomach. Some studies suggest an association and possible causality of *H. pylori* infection in some dermatological diseases. The aim of the work was to assess the frequency of dermatological diseases in patients with *H. Pylori* infection. **Methods:** This was an observational cross-sectional study, carried out at Aswan University Hospital. 200 patients infected with *H. Pylori*, diagnosed by stool antigen test, were selected for dermatological evaluation to detect the presence of dermatological diseases and the effect of *H. Pylori* treatment on these diseases. Re-testing was performed to confirm successful eradication. **Results:** Only 23 patients (11.5%) had skin manifestations; the most frequent was generalized itching (34.8%), followed by chronic idiopathic urticaria. The least frequent was Lichen planus with Vitiligo (4.3%). Of whom, thirteen patients (56.5%) responded well to treatment while ten patients (43.5%) didn't respond to treatment. **Conclusion:** Nearly most of the *H. Pylori* infected patients (88.5%) did not suffer from any skin manifestations and there is no significant causation between dermatological diseases and *H. Pylori* infection but maybe there is an association, as evident by improvement of dermatological diseases after *H. Pylori* eradication.

## INTRODUCTION:

*Helicobacter pylori* is a Gram-negative, microaerophilic, helical, flagellated bacterium that may alter its morphology from spiral to coccoid, a transformation considered to facilitate its survival in the gastric microenvironment of the host (1). *Helicobacter pylori* infection is frequent in Egypt, affecting all age demographics, with a higher incidence in adults compared to the pediatric population (2).

The pathogenicity of *Helicobacter pylori* relates to various mechanisms, including the modification of host signaling networks, indirect inflammatory responses triggered in the gastric mucosa, and direct epigenetic effects on gastric epithelial cells (3). *Helicobacter pylori* is regarded as a causal factor in chronic gastritis, significantly contributing to the onset of peptic ulcers and non-cardia adenocarcinoma of the stomach. Certain investigations indicate a correlation and potential causation between *Helicobacter pylori* infection and specific dermatological conditions (4). The methods by which it may

contribute to the etiology of dermatological illnesses remain unidentified. The potential mechanism by which *Helicobacter pylori* induce rosacea may involve elevated tissue and serum concentrations of Nitric oxide (NO), resulting in vasodilation and immunomodulation that promote flushing and erythema (5).

We aimed to assess the frequency of dermatological diseases in patients with *H. pylori* infection in Aswan university hospital and the impact of its treatment on these diseases.

## PATIENTS AND METHODS

This was an observational cohort study conducted at Aswan University Hospital.

Operational Design: Two hundred patients infected with *H. Pylori* were selected for dermatological evaluation to detect the presence of dermatologic diseases.

Inclusion Criteria: - Patients with documented *H. Pylori* infection over eighteen years old.

Exclusion Criteria: - Cases have been excluded from the research if they had: Dermatological disease which is known to occur secondary to collagen vascular disease, malignancy or specific diseases such as HIV, HBV and HCV. Or history of use of drugs which are known to have dermatological side effects.

The following data were reported for all patients included in the study:

Medical history taking including: Age, sex, dyspepsia, profession, history of upper gastrointestinal pain, or ulcer disease and the use of medication or drugs for any gastro-intestinal complaints, like antacids, histamine-2-blocking or proton pump inhibitors agents.

A full clinical examination was performed. Also, all patients were referred to dermatology out-patient clinic in Aswan university hospital for dermatological evaluation.

Laboratory investigations: including *H. pylori* stool antigen and data of previous Esophagogastroduodenoscopies (EGD) were reported whenever done.

Ethical Considerations: Approval of the ethical committee board was obtained, all participants had written informed consent before study enrolment, the confidentiality of all included participants was fully protected as they weren't identified by names, or any personal data and all participants had the right to leave at any stage of the study if they wanted.

### Statistical Analysis

Data was gathered, revised, encoded, and input into the Statistical Package for Social Sciences (IBM SPSS) version 23. The qualitative data have been given as numbers and percentages, whereas the quantitative data have been presented as standard deviations, means ,and ranges when their distribution had been determined to be parametric.

## RESULTS

Our observational cohort research has been performed in two hundred cases above eighteen years old with positive *H. pylori* infection in Aswan University Hospital. Regarding gender and age, 87 (43.5%) of the cases were males and 113 (56.5%) were females. Their age varied from 15 - 58 years (mean  $38.25 \pm 14.03$  years).

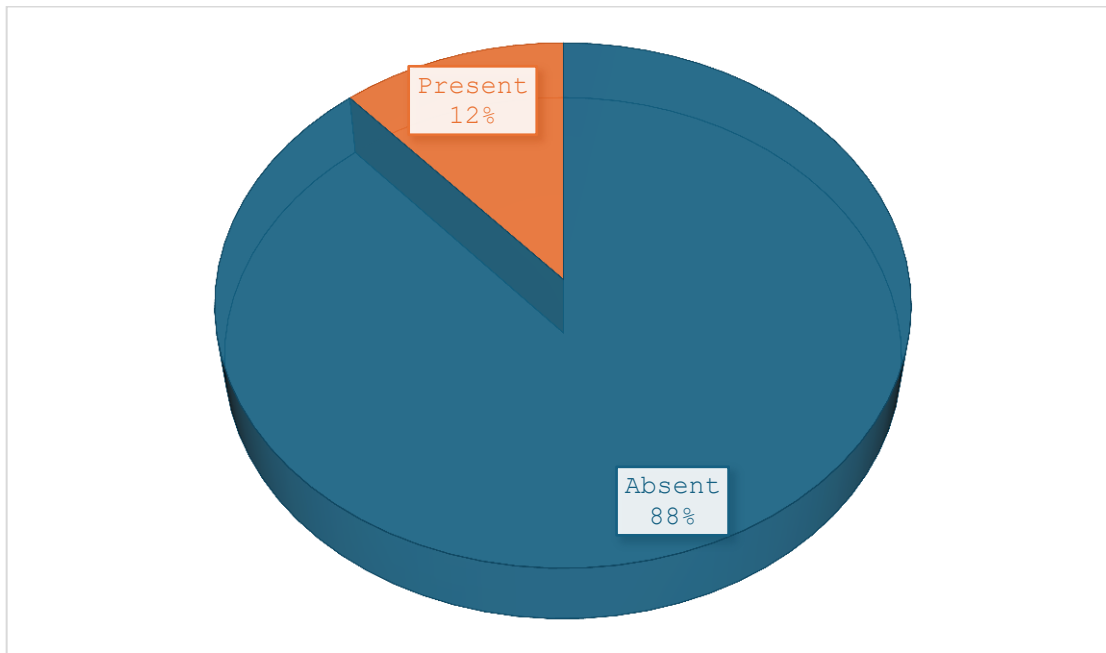
**Table (1):** Distribution of the cases examined according to treatment.

Treatment		No.	%
Previous history of treatment	No	160	80.0%
	Yes	40	20.0%
Regimen of treatment used	Levofloxacin based therapy	138	69.0%
	Clarithromycin based therapy	62	31.0%
Response of treatment as regard skin manifestation (present in 23 patients)	Yes (disappearance of the skin lesions)	13	56.5%
	No (persistence of the skin lesions)	10	43.5%

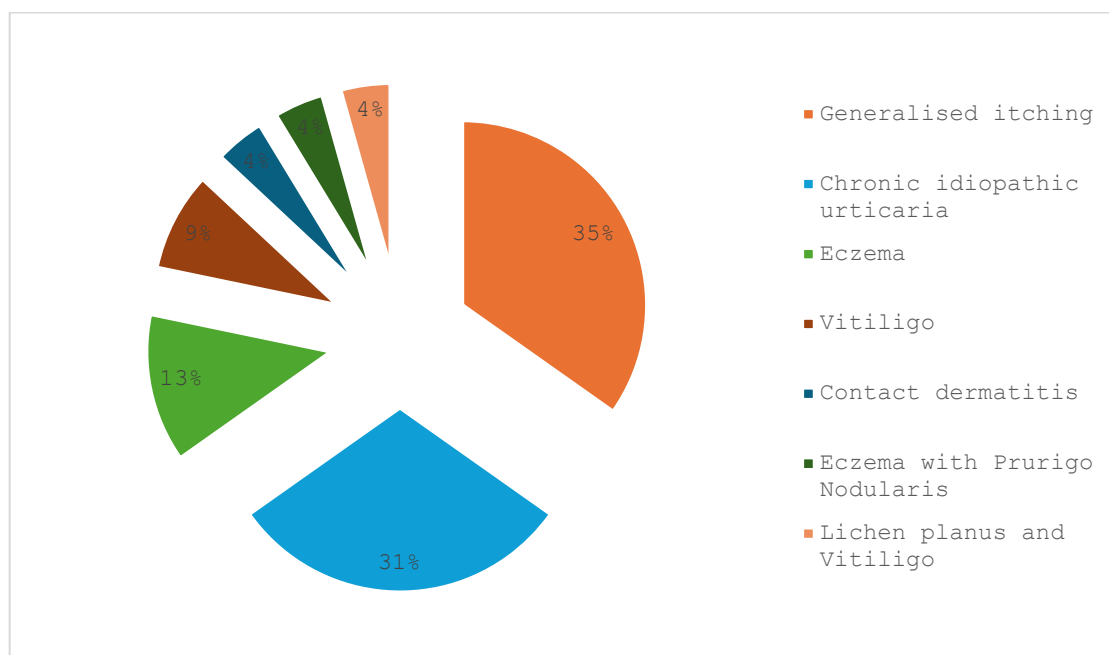
**Table (2):** Distribution of the examined cases regarding EGD and Biopsy

		No.
Finding on EGD if done (85 patients)	Gastritis and Duodenitis. Peptic ulcer	74 (86.1 %) 11 (12.9 %)
Report on biopsy if taken (14 Patients)	<i>H-pylori</i> related gastritis & focal intestinal metaplasia.	1 (7.1%)
	Chronic gastritis related to <i>Helicobacter pylori</i> infection with ulcerations	13 (92.9%)

**Figure (1):** Distribution of the cases studied regarding presence of dermatologic diseases



**Figure (2):** Distribution of cases with dermatologic diseases.



## DISCUSSION

*Helicobacter pylori* is a human-associated organism colonizing the stomach. *Helicobacter pylori* doesn't act only at the gastric level. The strength of association between extra-gastric diseases and *H. Pylori* is variable (6).

Our study aimed for the assessment of the frequency of dermatological diseases in patients with *H. pylori* infection in Aswan university hospital.

Our study reported that 87 (43.5%) of the cases were males and 113 (56.5%) were females. Their age varied from 15 to 58 years (mean  $38.25 \pm 14.03$  years).

Our findings regarding the GIT symptoms related to *H. pylori* reported that (92.0%) of the patients had epigastric pain, (86.0%) of the patients had heart burn, (41.0%) of the cases had bloating, (29.5%) of the cases had nausea, (28.0%) of the cases felt full after eating small meals, (24.5%) of the patients had loss of appetite, (18.0%) of the patients had vomiting, 12.0% of the patients had hematemesis and (11.5%) of the patients had melena, with the commonest finding being the epigastric pain and melena is the least.

Like our findings, a study by Sabah et al., included 143 patients to highlight the importance of *Helicobacter pylori* infection among patients with different gastrointestinal tract symptoms and among distinct age groups in Tanta city district reported that epigastric pain (91%) and heart burn (87%) were common symptoms related to *Helicobacter pylori* stool Ag positive cases. Melena (3.6%) was the least symptom. Nausea/vomiting represented (34%) of the symptoms. However, flatulence represented (75%) of the symptoms (7).

Also, Metwally et al., reported that all culture positive cases had abdominal pain (100%), (85%) had heart burn, (30%) had nausea/vomiting, (45%) had bloating, however, research patients had higher prevalence of hematemesis and/or melena (45%), this could be as they had only 20 culture positive patients (8).

Regarding skin manifestations in our study, 177 (88.5%) of the patients didn't suffer from any skin manifestations while 23 (11.5%) had skin manifestation, 8 (34.8%) of them had generalized itching, 7 (30.4%) had chronic idiopathic urticarial, 3 (13.0%) had eczema, 2 (8.7%) had vitiligo, one (4.3%) case had contact dermatitis, one case (4.3%) had eczema with prurigo nodularis and one case (4.3%) had lichen planus and vitiligo.

Some papers reported improved symptoms of Chronic Idiopathic Urticaria (CIU) in a variable percentage of patients included in studies treated for *H. Pylori* infection. This partially explains the recommendation of Yadav et al., to look for *H. Pylori* gastro-intestinal infection before diagnosing

(CIU). In another case-control study, this recommendation was confirmed (9,10,11).

Daudén et al. were the first to propose a correlation between *Helicobacter Pylori* and Lichen Planus, demonstrating partial remission of cutaneous symptoms in three out of ten cases who had eradication therapy for *Helicobacter Pylori*. Nonetheless, skin lesions deteriorated in three additional patients. The correlation between *Helicobacter Pylori* and Lichen Planus in Psoriasis appears to be mostly attributed to the development of autoimmunity by infectious pathogens. Nonetheless, there exist research with contradictory findings (12).

İzol et al. and Pourshahidi et al. examined a total of 198 cases exhibiting cutaneous signs of Lichen Planus and seventy-three cases with both erosive and non-erosive oral Lichen Planus. They did not establish a correlation with *H. pylori* infection. Furthermore, the eradication treatment proved ineffective for cutaneous or oral disorders (13,14).

Neri et al. hypothesized a correlation between *Helicobacter Pylori* infection and Prurigo Nodularis based on an investigation including forty cases with Prurigo Nodularis who tested positive for *Helicobacter Pylori* infection. The authors noted a significant enhancement in cutaneous signs and symptoms following bacterial eradication in thirty-nine participants. A correlation among *Helicobacter Pylori* infection and Vitiligo has been proposed (15). Zakrzewski et al. revealed in their research that the prevalence of *Helicobacter Pylori* infection is markedly elevated in cases with Vitiligo (64.7%) compared to the control group (33.3%). The research failed to validate the impact of *Helicobacter Pylori* infection on the Vitiligo disease activity score or the pattern of Vitiligo participation (16).

In our study, 138 cases (69.0%) were administered Levofloxacin-based medication, while sixty-two cases (31.0%) received Clarithromycin-based therapy. In the study of twenty-three cases with skin illnesses, 13 (56.5%) exhibited a positive response to *H. pylori* treatment, evidenced by an improvement in skin manifestations, while ten (43.5%) didn't respond to the treatment.

Likewise, Guo et al. examined the impact of *Helicobacter Pylori* eradication on Chronic Idiopathic Urticaria (CIU). The treatment regimen for Chronic Idiopathic Urticaria cases in the *H. pylori* positive group was more effective than that for the *H. pylori* negative group, evidenced by a significantly decreased recurrence rate at three months in the former group ( $p < 0.05$ ) (17).

A study by Yang examined the correlation among *Helicobacter pylori* and Rosacea, indicating that *Helicobacter pylori* infection is linked to the onset of Rosacea. The addition of anti-*Helicobacter pylori* therapy is superior to standard treatment for Rosacea. Cases with Rosacea who test positive for *Helicobacter pylori* should undergo eradication therapy for *Helicobacter pylori*.

## CONCLUSION

Despite nearly most of the cases infected with *Helicobacter pylori* infection didn't suffer from any skin manifestations in our study, the correlation between *Helicobacter pylori* infection and dermatological diseases is an emerging area of research. Generalized itching, chronic idiopathic urticarial, and eczema have been found to be more common in those with *Helicobacter pylori* infection, and successful *Helicobacter pylori* eradication may lead to improvement of these skin lesions. Further clinical studies are needed with multi-center co-operation and larger sample size to validate our findings and to investigate the causal relation between dermatological diseases *H. pylori* infection..

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