

A REVIEW ON STUDY OF ERADICATION OF H.PYLORI AND REOCCURRENCE OF GASTROINTESTINAL SYMPTOMS AND FUNCTIONAL DYSPEPSIAD. Saipoojitha^{1*}, K. Navya¹, P. Minnu Chaitanya¹, K. Purnachander², N. Sravya³ and E. Vaishnavi³¹Department of Pharmacy Practice, Jyothishmati Institute of Pharmaceutical Sciences, Karimnagar, Telangana, India.²Professor & HOD of Pharmacy Practice, Jyothishmati Institute of Pharmaceutical Sciences, Karimnagar, Telangana, India.³Assistant Professor, Department of Pharmacy Practice, Jyothishmati Institute of Pharmaceutical Sciences, Karimnagar, Telangana.

*Corresponding Author: D. Saipoojitha

Department of Pharmacy Practice, Jyothishmati Institute of Pharmaceutical Sciences, Karimnagar, Telangana, India.

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ABSTRACT

The most common bacterial infection linked to stomach ulcers, peptic ulcer disease, mucosa-associated lymphoid tissue lymphoma, and gastric cancer is *Helicobacter pylori*. The first assessment should concentrate on diagnosing and treating *H. pylori* infection, treating potential symptom causes like acid reflux disease, peptic ulcer disease, and medication side effects, and identifying patients who may be at risk for more serious conditions like gastric cancer. It also covers endoscopy, *h. pylori* treatment, proton pump inhibitors, and other aspects of managing dyspepsia. The final topic discussed are how to treat refractory functional dyspepsia.

KEYWORDS: *H. Pylori* infection, gastrointestinal symptoms, Eradication of *H. Pylori*, Reoccurrence of GI symptoms, Functional dyspepsia, Gastric cancer.

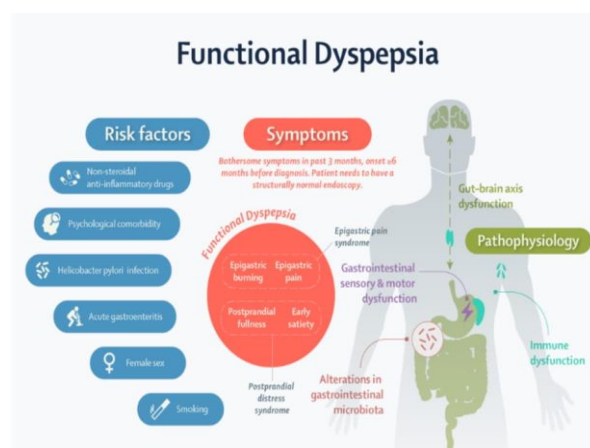
INTRODUCTION

Around half of the world's population have been diagnosed with the gram-negative spiral-shaped bacterium *H. pylori*. When Marshall and Warren cultivated campylobacter pyloridis, which was subsequently identified as *Helicobacter Pylori*, they were able to identify the Helical bacilli that reside in the stomach epithelium early in 1983. Through contaminated food and water, it spreads orally and fecally. By region, age, ethnicity, and socioeconomic status, the prevalence of infection varies. Microbiological characteristics that *H. Pylori* possesses enable it to endure extremely difficult environments, such as an acidic stomach environment.

Experiencing one or more of the following symptoms: burning, bloating, nausea, vomiting, heartburn, burning in the stomach, and postprandial fullness are all recognised signs of dyspepsia. Functional Dyspepsia is a condition that affects the upper gastrointestinal system and is common in everyone.

Before the *H. Pylori* bacteria was discovered, ulcers were thought to be caused by acid stress, spicy diet, and way of life. Known risk factors include age, socioeconomic conditions, genetic predisposition, and water sources. Potential risk factors include eating or using utensils with

someone who is ill, as well as coming into touch with contaminated water, their stool, saliva, or vomit.

**EPIDEMIOLOGY**

Globally, the prevalence of *H. Pylori* transmission varies; in the United States, it is 5% in children under the age of ten. When it comes to prevalence, African Americans exceed White Americans. According to reports, between 64 and 70 percent of Indians with stomach and duodenal ulcers also have *H. pylori* infection. Lower economic groups and developing countries have high rates of this health condition.

ETIOLOGY

The oral-oral, gastric-oral, faecal-oral, and sexual pathways are all possible ways for H. Pylori transmission. Lower socioeconomic status is one of the main risk factors for a greater infection occurrence. It typically spreads from person to person and is also possibly infected through infected vomit, mouth-to-mouth kissing, contaminated food, or utensils. The stomach lining is where the H. Pylori multiplies after it enters your body. This weakens the lining and increases the chances that the acids in your stomach may result in an ulcer.

SYMPTOMS

The most common symptoms include heartburn, nausea, vomiting, diarrhoea, anaemia, gastrointestinal bleeding, dyspepsia, melena, chest discomfort, regurgitation, belching, bloating, gastric burps, loss, appetite loss, and black stools.

PATHOPHYSIOLOGY

Clinical Conditions, including stomach ulcers caused by Helicobacter Pylori infection, are formed by four major factors. Firstly, the urease activity of Helicobacter Pylori plays an essential role in neutralising the acidic environment of the stomach. Second, the H. Pylori bacteria has the ability to go towards the host gastric epithelial cells with the help of flagella-mediated motility. Bacterial adhesins then bind with the receptors on host cells, leading to a successful colonisation and long term infection. Lastly, there are numerous effector proteins or toxins that cause damage to host tissue, such as H. Pylori released vacuolating cytotoxin A (VAC-A) and cytotoxin-associated gene a (CAG-A). Due to the stimulation of eosinophils, neutrophils, mast cells, and T dendritic cells are stimulated the epithelial cells also secrete chemokines to innate immunity and activate neutrophils that further damage the host tissue and cause the gastritis and ulcer.

DIAGNOSIS

RUT: The RUT (Rapid Urease Test) helps for diagnosing this H. Pylori infection. It's performed to

evaluate urease enzyme levels in clinical specimens. Several factors affecting RUT's final outcome include: Temperature, bacterial urease concentration, and reaction time at the ideal condition's levels of the substrate.

ENDOSCOPY: Investigating the H. Pylori in dyspeptic patients requires a painful procedure called endoscopy. Many patients choose not to have this operation since it takes 1-3 days leave from work and has a significant chance of viral contamination.

COMPLICATIONS OF UNTREATED H. PYLORI

Untreated H. Pylori is associated with an increase risk of peptic ulcer disease, gastric adeno carcinoma, and gastric MALT lymphoma, stomach ulcers, chronic gastritis, erosive gastritis. Long term infection with H.Pylori increases the risk of stomach cancer.

Depression among people with dyspepsia and H. Pylori infection

In recent study we got know that depression is mainly characterised by feelings of sadness and lack of interest with other supporting symptoms over a long period of time. There are possible biological pathways linking to depressive symptoms, H. Pylori infection and GI symptoms including endocrine, nervous and immunological system. At the time of stress, the hypothalamus-pituitary-adrenal axis becomes activated in response to stress as an adaption mechanism. Chronic stress can result in maladaptive state of elevated levels of cortisol potentially contributing to mood disturbances as well as development of upper GI symptoms.

Depression is common among patients with gastritis and associated with gastrointestinal inflammation as well as functional dyspepsia. Depression is also one of the risk factors for functional dyspepsia, gastric adenoma, irritable bowel syndrome. Furthermore, individuals with adjustment disorder may experience physical symptoms as reaction to stressful events, and this overlap with symptoms with dyspepsia.

PHARMACOLOGICAL TREATMENT

DRUG 1	DRUG 2	DRUG 3	DRUG 4
Proton pump inhibitor-based triple therapy: PPI once or twice daily	Clarithromycin 500mg twice daily	Amoxicillin 1g twice daily or metronidazole 500mg twice daily	-
Bismuth-based quadruple therapy: PPI or H2RA once or twice daily	Bismuth subsalicylate 525mg 4 times daily	Metronidazole 250-500mg 4 times daily	Tetracycline 500mg 4 ties daily
Sequential therapy: PPI once or twice daily on days 1-10	Amoxicillin 1g twice daily on day 1-5	Metronidazole 250-500mg twice daily on days 6-10	Clarithromycin 250-500mg twice daily on days 6-10
Second-line(salvage) therapy for persistent infections: PPI or H2RA once or twice daily PPI once or twice daily	Bismuth subsalicylate 525mg 4 times daily Amoxicillin 1g twice daily	Metronidazole 200-500 mg 4 times daily Levofloxacin 250mg twice daily	Tetracycline 500mg 4 times daily

ORAL DRUG TREATMENT TO TREAT PEPTIC ULCERS AND MAINTAIN ULCERS HEALING

Rabeprazole	Aciphex	20 daily	20 daily
Pantoprazole	Pantoprazole, various	40 daily	40 daily
Esomeprazole	Nexium	20-40 daily	20-40 daily
Dex lansoprazole	Dexilant	30-60 daily	30 daily
H2-Receptor Antagonist			
Cimetidine	Tagmet, various	300 four times daily,400 twice daily,800 at bed time	400-800 at bedtime
Famotidine	Pepcid, various	20 twice daily,40 at bed time	20-40 at bedtime
Nizatidine	Axid, various	150 twice daily,300 at bedtime	150-300 at bedtime
Ranitidine	Zantac, various	150 twice daily,30 at bed time	150-300 at bedtime
Promote mucosal Défense			
Sucralfate	Carafate, various	1g 4 times daily 2g twice daily	1-2 g twice daily 1g 4 times daily

NON-PHARMACOLOGICAL TREATMENT

- Avoid salty and fatty foods like fried foods, processed meat, salted nuts, frozen meals.
- Refrain from drinking alcohol and coffee frequently which leads to inflammation of the tissues and aggravates irritation.
- Add more probiotic-rich foods to your diet like yogurt.
- Ensure drinking at least eight glasses of water a day which decreases irritation neutralize gastric juice by increasing its PH level.
- practise good hygiene, such as washing hands frequently.
- Avoiding contaminated foods and water sources.
- Frequent consumption of fresh fruits and vegetables has been associated with protection against H. Pylori infection.
- Reduce psychological stress by practising meditation and avoid the use of NSAIDS.

H. PYLORI AND RELATED NUTRITIONAL FACTORS

Undoubtedly, H. pylori is a bacterium that affects gastric tissues and multiplies in the human stomach due to factors such as stress.

H.PYLORI AND IRON DEFICIENCY ANAEMIA

Iron insufficiency will develop over a long period of time and in certain risk groups since the human body stores iron securely to defend itself against oxidative and bacterial damage. However, H. pylori-induced gastritis can result in acid production that prevents the absorption of iron and leads to insufficiency.

H.PYLORI AND VITAMIN C

One macronutrient that is necessary for human health is vitamin C. Vitamin C's bioavailability is greatly decreased by H. pylori. Vit C absorption in the stomach mucosa may be disrupted and the pH of gastric juice may rise due to atrophic gastritis, a condition caused by H. pylori that leads to the development of gastric cancer. On the other hand, high vitamin C doses may cause adverse effects such as gastrointestinal distress and, in particular, osmotic diarrhoea. Additionally, it raises the excretion of

oxalate and uric acid, and it may also raise the risk of kidney stones due to calcium oxalate.

H.PYLORI AND SALT

Research has shown that consuming large amounts of salt might affect the way bacteria and stomach tissue interact, functioning in combination with H. pylori to increase the risk of chronic infection.

H.PYLORI AND PROBIOTICS

Probiotic refers to "biotic life for life" or "pro-for "living microorganisms that, in moderate amounts, enhance the host's health. It binds itself to TLR that is expressed on the surface of epithelial cells, activating many immune defence pathways. Certain probiotics reduce the adverse effects of infection after h. pylori treatment.

REOCCURENCE OF GASTROINTESTINAL SYMPTOMS-FUNCTIONAL DYSPESIA

In primary care, nearly half of medical visits are related to digestive issues. During standard diagnostic methods, no structural, organic, systemic, or metabolic cause can be identified for about one-third of these symptoms. It is determined that these people have functional gastrointestinal disorders (FGID). Functional dyspepsia (FD), an upper gastrointestinal condition that affects 5%–20% of the population, is one of the most common FGIDs. Recurrent or persistent epigastric symptoms, including as early satiation, postprandial fullness, epigastric discomfort, and epigastric burning, are suggestive of FD. At least six months prior to the diagnosis, these symptoms must have started at least three months ago. It is estimated that between 40% and 70% of FD patients have an H. pylori infection.

EVALUATION OF THE SEVERITY OF FUNCTIONAL DYSPESIA

Based on the severity assessment score, the severity of the symptoms is evaluated. The score for the symptoms that indicates how severe the symptoms are for the specific patient is called the dyspepsia severity evaluation score.

We can determine the patient's specific symptom severity with the use of this dyspepsia severity assessment score.

Dyspepsia severity assessment score

COMPONENT	SCORE
Epigastric discomfort or pain	All of time:0
Post prandial heaviness	Most of time:1
Early satiety	Some of time:2
Nausea	A little of time:3
vomiting	Never:4
Heart burn	
Belching	
Bloating	

H-PYLORI ERADICATION

H. pylori infection affects at least 50% of people on the planet. Between 40% and 80% of FD patients have h. pylori. In comparison with placebo or control treatments, the standard method for eradicating H. pylori involves administering a proton pump inhibitor in addition to an antibiotic. Adults are more commonly infected than children. Peptic ulcers decrease significantly and gastritis is reversed during successful h. pylori eradication.

REOCCURENCE OF H. PYLORI INFECTION

There are two distinct mechanisms that can be used to classify the recurrence of H. Pylori infection: reinfection and recrudescence. The recurrence of the original strain after initial eradication is known as recrudescence, and it is taken as a sign that eradication was unsuccessful. After the first eradication, a new strain of the pathogen appears during reinfection. People who have successfully eradicated H. Pylori from their bodies often have close relationship with family members who have infection and sharing meals, tooth brushes, contaminated food and water, the infection will reoccur.

FACTORS INFLUENCING H. PYLORI ERADICATION

In comparison to emerging countries, the annual recurrence rate of Helicobacter Pylori is significantly higher in developing countries. It is widely recognised that host factors including overall H. Pylori infection rate, personal hygiene practices, and so on have a major role in reinfection.

Recurrence is caused by small levels of un killed H. Pylori and poor sanitation. There is a mild return of H. Pylori after it is eliminated, which is brought on by low income, contaminated eating environments, and invasive diagnosis or treatment.

CONCLUSION

In patients with PUD or gastric cancer who are examined for H. pylori, triple or quadrapule therapy along with infection eradication is the recommended course of treatment. for the right treatment plan is very dynamic, but because of high rates of resistance, prescription prices, side effects, and patient non adherence. An oral recombinant H. pylori vaccine is the long term treatment for this H. Pylori infection. Especially in countries that are under developed, this may be taken into consideration as a potential future alternative to lower

the incidence of H. Pylori infection. upto three years of protection from H. pylori infection was provided by the vaccine, if this period is exceeded, booster doses are administered to provide a long term protection aganist H. Pylori infection.

The most common and persisting bacterial infection continues to be h. pylori infection, which can be treated using a variety of methods and requires an accurate diagnosis. The patient's symptoms, the clinical state, and the infection prevalence are used to determine the infection. In addition to therapy, there are lifestyle modifications that can be made to reduce symptoms, such as reducing back on caffeine, tea, spicy foods, fasting, and other habits.

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