

REVIEW ON: MANAGEMENT OF PEPTIC ULCER & NATURAL REMEDIES ON THAT GARKHEDE P. R.^{1*}, JAYBHAYE S. S.¹, PHOKE S. V.¹SYYED F. N.¹, MAHAJAN C. C.¹

1. Department of Pharmaceutics, Institute of Pharmacy, Badnapur, Jalna- 431203 (MS), India.

Abstract

Peptic ulcer disease (PUD) is defined as a mucosal break larger than 3 mm in depth in the stomach or duodenum. The two major causes of PUD are Helicobacter pylori infection and NSAID usage. Less common causes are severe physiological stress (e.g., severe illness, burns, or surgery) or hypersecretory states (e.g., Zollinger_Ellison syndrome). Contributing factors include smoking, ethanol, bile acids, aspirin, corticosteroids, and stress. Symptoms of peptic ulcer disease include epigastric discomfort (specifically, pain relieved by food intake or antacids and pain that causes awakening at night or that occurs between meals), loss of appetite and weight loss/weight gain, nausea and vomiting ,melena. The most common causes of peptic ulcer are infection with bactrerium helicopter pylori [Pylori)] and long term use of non-steroidal anti- inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Martin IB others) and naproxen sodium (Aleve). Stress and spicy foods do not cause peptic ulcers.

Key words: peptic ulcer disease, stomach ulcer, gastric ulcer, H-pylori infection

1. INTRODUCTION

Peptic ulcer is the break down in the mucosal lining of the GIT mainly occurs in the esophagus, stomach, duodenum by acidic digestive juice. (Or)It is open sores that develop on the inside lining of your stomach and the upper portion of your small intestine^[1].Peptic ulcer disease (PUD) is characterized by discontinuation in the inner lining of the gastrointestinal (GI) tract because of gastric acid secretion or pepsin. It extends into the muscularis propria layer of the gastric epithelium. It usually occurs in the stomach and proximal duodenum ^[2].

The most common cause of stomach ulcers is a bacterium called helicobacter pylori. Similarly, excessive use of pain medicines such as aspirin and nonsteroidal anti-Inflammatory drugs such as ibuprofen, naproxen, and others can cause ulcers. A large amount of excess acid is produced in response to the overproduction of the hormone gastrin, which in turn is caused by Ulcer on the pancreas or duodenum ^[3].

Ulcers can develop in the esophagus, stomach or duodenum, at the margin of a gastroenterostomy, in the jejunum, in Zollinger-Ellison syndrome, and in association with a Meckel's diverticulum containing ectopic gastric mucosa.

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Peptic ulcer disease is one of Several disorders of the upper gastrointestinal tract that is caused, at least partially, by gastric acid. Patients with peptic ulcer disease May present with a range of symptoms, from mild abdominal discomfort to catastrophic perforation and bleeding^[4].

2. TYPES OF PEPTIC ULCER

Peptic ulcer having three types

a) Duodenum ulcer **ESOPHAGUS** b) Esophageal ulcer Gastric ulcer c) ESOPHAGEAL ULCER DUODENAL ULCER GASTRIC ULCER STOMACH DUODENUM Figure 01: Types of Peptic Ulcer

a) **Duodenum ulcer:** A duodenal ulcer is a sore that forms in the lining of the duodenum and a ulcer in the lining of the beginning of the small intestine (duodenum). Ulcer formation is caused by infection with Helicobacter pylori ^[5]

b) Esophageal ulcers: An esophageal ulcer is a distinct break in the margin of the esophageal mucosa. This mucosal damage to the esophagus is often caused by gastro- esophageal reflux disease or from severe sustained esophagitis from other causes ^[6]. Esophageal ulcers usually form as a result of an infection with a bacterium called Helicobacter pylori. It can also be caused by erosion from stomach acid moving up into the esophagus. In some cases, other infections from yeast and viruses can also in result in esophageal ulcers ^[7].

c) Gastric ulcer: Also known as stomach ulcer. Gastric ulcers are open sores that develop on the lining of the stomach. Stomach ulcers occur when the layer protecting the stomach lining from stomach acid breaks down. This allows the stomach lining to become damaged ^[8].

3. EPIDEMIOLOGY

Incidence and prevalence - In a systematic review of 31 published studies, the pooled incidence of uncomplicated peptic ulcer disease (PUD) was approximately one case per 1000 person- years in the general population, and the incidence of ulcer complications was approximately 0.7 cases per 1000 person-years ^[9] Peptic ulcer disease [PUD] is global Problem with lifetime risk of development ranging from 5% to 10%. Overall, there is a decrease in the incidence of PUD worldwide due to improved hygienic and sanitary conditions combined with effective treatment and judicious use of NSAIDs. Duodenal ulcers are four times more common than gastric ulcers. Also, duodenal ulcers are more common in men than in the woman. The prevalence of peptic ulcer disease is estimated to be 4.5 million cases annually. The median age of diagnosis is 18–30 years. ^[10]

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4. ETIOLOGY

The most common causes of peptic ulcers are infection with the bacterium Helicobacter pylori (H. pylori) and longterm use of nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Motrin IB, others) and naproxen sodium (Aleve). Stress and spicy foods do not cause peptic ulcers. Peptic ulcers occur when acid in the digestive tract eats away at the inner surface of the stomach or small intestine. The acid can create a painful open sore that may bleed. Digestive tract is coated with a mucous layer that normally protects against acid. But if the amount of acid is increased or the amount of mucus is decreased, you could develop an ulcer^{[11].}

Almost half of the world's population is colonized by H. pylori. The organism is usually acquired in childhood and persists until treated. Risk factors for acquiring the infection include a lower socioeconomic status and unsanitary conditions or crowding^{[12].}

H. pylori cause an inflammatory response with neutrophils, lymphocytes, plasma cells, and macrophages within the mucosal layer and causes epithelial cell degeneration and injury. Gastritis is usually more severe in the antrum, with little or no inflammation in the corpus^{. [13].}

5. COMMON CAUSES INCLUDE:

• **Bacterium:** Helicobacter pylori bacteria commonly live in the mucous layer that covers and protects tissues that line the stomach and small intestine. Often, the H. pylori bacterium causes no problems, but it can cause inflammation of the stomach's inner layer, producing an ulcer. It's not clear how H. pylori infection spreads. It may be transmitted from person to person by close contact, such as kissing. People may also contract H. pylori through food and water.

• **Regular use of certain pain relievers:** Taking aspirin, as well as certain over-the-counter and prescription pain medications called nonsteroidal anti-inflammatory drugs (NSAIDs), can irritate or inflame the lining of your stomach and small intestine. These medications include ibuprofen (Advil, Motrin IB, others), naproxen sodium (Aleve, Anaprox DS, others), ketoprofen and others. They do not include acetaminophen (Tylenol, others).

• Other medications: Taking certain other medications along with NSAIDs, such as steroids, anticoagulants, low-dose aspirin, selective serotonin reuptake inhibitors (SSRIs), alendronate (Fosamax) and risedronate (Actonel), can greatly increase the chance of developing ulcers. ^[14]



Figure 02: Common Causes

6. SIGN AND SYMPTOMS OF PEPTIC ULCER

Common symptoms of peptic ulcer disease include:

- Stomach pain
- Blood in vomit
- Nausea
- Loss of appetite
- Heartburn
- Stool discoloration
- Bloating

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Indigestion

Burning and may come and go over time. For some people, the pain may occur when the stomach is empty or at night, and it may go away for a short time after they eat. For other people, eating may make the pain worse. Many people who have peptic ulcers don't have any symptoms. They may not develop symptoms until an ulcer leads to complications. You should call or see your doctor right away if you have symptoms that could be caused by a complication. These symptoms include

Black or tarry stool, or red or maroon blood mixed with your stool Red blood in your vomit or vomit that looks like coffee grounds Sudden, sharp, or severe abdominal pain that doesn't go away Feeling dizzy or fainting



Figure 03: Sign & Symptoms of Peptic Ulcer

7. PATHOPHYSIOLOGY

The peptic ulcer disease (PUD) mechanism results from an imbalance between gastric mucosal protective and destructive factors. Risk factors predisposing to the development of PUD:

- H. pylori infection
- NSAID use
- First-degree relative with PUD
- Emigrant from a developed nation
- African American/Hispanic ethnicity

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With peptic ulcers, there is usually a defect in the mucosa that extends to the muscularis mucosa. Once the protective superficial mucosal layer is damaged, the inner layers are susceptible to acidity. Further, the ability of the mucosal cells to secrete bicarbonate is compromised. H. pylori are known to colonize the gastric mucosa and causes inflammation. The H. pylori also impair the secretion of bicarbonate, promoting the development of acidity and gastric metaplasia ^[16]

8. DIAGNOSTIC EVALUATION:

Laboratory test for H. pylori

Your doctor may recommend tests to determine whether the bacterium H. pylori are present in your body. He or she may look for H. pylori using a blood, stool and breath test. The breath test is the most accurate.

A. Blood test:

Checks for antibodies (infection-fighting cells) to H. pylori

Test procedure:

- A health care professional will take a blood sample from a vein in your arm, using a small needle.
- After the needle is inserted, a small amount of blood will be collected into a test tube or vial.

B. Urea breath test:

Also known as a urea breath test Checks for infection by measuring certain substances in your breath

Test procedure:

- You will provide a sample of your breath by breathing into a collection bag.
- After that, you will swallow a pill or liquid containing a harmless radioactive material.
- You will provide another sample of your breath.
- Your provider will compare the two samples. If the second sample has higher than normal carbon dioxide levels, it is a sign of an H. pylori infection.
- C. Stool test: .Your provider may order a stool antigen or a stool culture test.

A stool antigen test looks for antigens to H. pylori in your stool. Antigens are substances that trigger an immune response.

A stool culture test looks for H. pylori bacteria in the stool.

Samples for both types of stool tests are collected in the same way. Sample collection usually includes the following steps:

i.Put on a pair of rubber or latex gloves.

ii.Collect and store the stool in a special container given to you by your health care provider or a lab.

iii.If collecting a sample from a baby, line the baby's diaper with plastic wrap.

iv.Make sure no urine, toilet water, or toilet paper mixes in with the sample.

v.Seal and label the container.

vi.Remove the gloves, and wash your hands.

vii.Return the container to your health care provider.^[17]

Barium swallows x-ray

A barium swallow, also called an esophagogram, is an imaging test that checks for problems in your upper GI tract. Your upper GI tract includes your mouth, back of the throat, esophagus, stomach, and first part of your small intestine. The test uses a special type of x-ray called fluoroscopy. Fluoroscopy shows internal organs moving in real time. The test also involves drinking a chalky-tasting liquid that contains barium. Barium is a substance that makes parts of your body show up more clearly on an x-ray.^[18]

Endoscopy

Gastrointestinal endoscopy allows the physician to visualize and biopsy the upper gastrointestinal tract including the esophagus, stomach and duodenum. The Enter scope (a longer endoscope) allows visualization of at least 50% of the small intestine, including most of the jejunum and different degrees of the ileum. DuringThese procedures, the patient are given a numbing agent to help prevent gagging. Pain medication and a sedative may be administered prior to the procedure. The Patient is placed in the left lateral position. Room set-up and patient positioning for endoscopy. An endoscope (a thin, flexible, lighted tube) is passed through the mouth and pharynx and into esophagus. The forward-viewing scope transmits an image of the. Esophagus, stomach and duodenum to a monitor visible to the physician. Air may be introduced into the stomach, expanding the folds of tissue, and enhancing examination of the stomach ^[18].

9. MANAGEMENT:

a) Medical management

Antibiotics

If you have an H. pylori infection, patient'll usually be prescribed a course of 2 antibiotics, which each need to be taken twice a day for a week. The antibiotics most commonly used are amoxicillin, clarithromycin and metronidazole. The side effects of these antibiotics are usually mild and can include:

- Feeling and being sick
- Diarrhea
- ✤ A metallic taste in your mouth

Patient'll be tested at least 4 weeks after finishing your antibiotic course to see if there are any H. pylori bacteria left in your stomach. If there are, patients may need a course of different antibiotics.

Proton pump inhibitors (PPIs)

also called PPIs — reduce stomach acid by blocking the action of the parts of cells that produce acid.

These drugs include the prescription and over-the-counter medications

- ✤ omeprazole (Prilosec),
- ✤ Lansoprazole (Prevacid),
- ✤ rabeprazole (Aciphex),
- ✤ esomeprazole (Nexium)
- pantoprazole (Protonix)

Side effects of these are usually mild, but can include:

- Headaches
- Diarrhea or constipation
- Feeling sick
- Stomach ache
- Dizziness
- Rashes

H2-receptor antagonists

Like PPIs, H2-receptor antagonists work by reducing the amount of acid your stomach produces.

Ranitidine is the most widely used H2-receptor antagonist for treating stomach ulcers. Side effects are uncommon, but may include:

- Diarrhea
- Headaches
- Dizziness•Rashes
- Tiredness

Antacids and alginates

Treatments can take several hours before they start to work, so your GP may recommend taking additional antacid medication to neutralise your stomach acid quickly and relieve symptoms in the short term. Some antacids also contain a medicine called an alginate, which produces a protective coating on the lining of your stomach. These medications are available to buy over the counter at pharmacies. Your pharmacist can advise on which is most suitable for you. Antacids should be taken when you experience symptoms or when you expect them, such as after meals or at bedtime ^{[20].}

Antacids containing alginates are best taken after meals. Side effects of both medications are usually minor and can include:

- Diarrhea or constipation
- Farting (flatulence)
- Stomach cramps
- Feeling and being sick.
- b) Surgical management

Vagotomy:

A vagotomy is a type of surgery that removes all or part of your vagus nerve. This nerve runs from the bottom of your brain, through your neck, and along your esophagus, stomach, and intestines in your gastrointestinal (GI) tract. [21]

The basic types of vagotomy are:

a. Truncal vagotomy: This procedure cuts out part of the vagus nerve at the gastro esophageal junction this is the area that connects the tube from mouth, called the esophagus, to your stomach. After this surgery, stomach won't

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have nerve supply, which can stop gastric acid from being released, and it can affect food movement through intestines.

b. Selective vagotomy

As the name suggests, this surgery is more precise than truncal vagotomy. Only the part of the nerve that goes to the stomach is removed, and the vagus nerve connection to the gallbladder and intestine is left in place. The selective vagotomy was designed to create fewer side effects than Truncalvagotomy.

c. Highly selective vagotomy

This procedure is also called parietal cell vagotomy and is the most precise option. It involves removing part of the vagus nerve only where it connects with the parietal cells in the stomach wall that release gastric acid ^[21].



Figure 04: Surgical management of Peptic Ulcer

10. LIFESTYLE CHANGES TO TREAT PUD

Along with medication, these lifestyle Changes may be helpful in assisting to Control the pain of peptic ulcer disease.

Wise diet choices-eating plenty of fresh fruits, vegetables and whole grains may promote healing. Processed foods, fried foods and junk food will make it harder to heal.

Change your pain reliever-because PUD can be aggravated by using certain pain relievers, talk to your doctor about a different option.

Stop smoking-Smoking can affect the mucus lining of the stomach and produce more stomach acid. Smoking causes inflammation and increases stomach acid. It also slows healing. Not smoking may ease symptoms.

Avoid alcohol-Alcohol can wear away the mucus layer of the stomach and intestine . Alcohol can irritate the stomach lining. This can worsen symptoms.

 Manage stress-Use exercise, mediation, relaxation techniques and recreation to reduce stress and reduce stomach acid production .[26]

© 2023 IJNRD | Volume 8, Issue 6 June 2023 | ISSN: 2456-4184 | IJNRD.ORG 11. NATURAL AND HOME REMEDIES FOR STOMACH ULCERS

Flavonoids

Flavonoids are naturally found in fruits, vegetables, and other plant products with anti-inflammatory and antioxidant properties. They may improve the inflammation associated with ulcers and protect the lining of the stomach wall from NSAID damage.

Flavonoids-rich foods include:



Aloe Vera

Stomach ulcers can cause inflammation in the wall of the stomach or small intestine, which leads to pain and difficulty eating. Aloe Vera helps to coat the lining of the stomach and has been found to have antiinflammatory effects on

the gastrointestinal tract. Researchers also found that aloe Vera. Improved inflammation symptoms in individuals with ulcerative colitis.

Probiotics

Probiotics are live microorganisms made up of bacteria and yeast. They are known as good bacteria that can keep your gut healthy. A study found that when combined with traditional triple therapy, probiotics improved the treatment of peptic ulcers and reduced the risk of treatment side effects.5 Triple therapy for ulcers includes amoxicillin, a proton pump inhibitor medication, and Biaxin (clarithromycin).

Ginger

Ginger is a spice that has been used to improve stomach upset for years. A study examined the effects of ginger on inflammatory bowel disease and found that it was able to target inflammation in the gastrointestinal tract and block damage. It also promoted healing factors in the gut. Ginger has also been shown to be effective in preventing gastric ulcers caused by H. pylori, stress, alcohol, and NSAIDs.

Turmeric

Turmeric is a member of the ginger family and is a popular health supplement. Curcumin, the main component of turmeric, has been found to protect against inflammation. It may have a preventive effect on gastric ulcer disease. While more research is needed, the initial findings are promising

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✤ Honey

You may have tried honey to relieve cold symptoms in the past, but it can do so much more. Studies have found that honey has both antimicrobial and antifungal properties, which means it can fight bacteria and fungus in the body. It also has antiviral and antioxidant properties. Honey has been used to

✤ Garlic

Garlic has antioxidant and antimicrobial properties. A study found that taking a garlic supplement can inhibit H. pylori colonization in the digestive tract, which helps prevent stomach ulcers. Garlic also reduces inflammation in the body treat inflammatory gastrointestinal diseases.

Mastic

Mastic gum is a natural resin produced by trees that grow on the Greek island of Chios. Mastic has antioxidant properties and aids in immune system regulation. It is used in alternative medicine to treat inflammatory bowel disease and ulcers.

* Chamomile

Chamomile is a daisy-like herb that is used for a variety of ailments. Chamomile has been found to ease inflammation in the digestive tract and can help treat mild ulcerative colitis

Deglycyrrhizinated Licorice

Licorice has been found to inhibit H. pylori activity in the gut. This may help to prevent the formation of ulcers due to this type of bacteria. Deglycyrrhizinated licorice has the glycyrrhizic acid removed and tends to cause fewer side effects.

Fenugreek

Fenugreek leaves contain compounds that may heal the ulcer. Boil 1 cup of fenugreek leaves and add a pinch of salt to it. Drink this twice a day

12. FUTURE DIRECTIONS

In the past, H. Pylori infection and the use of NSAIDS dominated Peptic Ulcer disease Research, impacting diagnosis and treatment. Even though H. Pylori infection may be Successfully treated with current pharmacologic approaches, novel eradication Monotherapies that simplify treatment regimens while increasing eradication rates are still Required. We will continue to employ molecular methods to identify genetic features that predict the development of idiopathic ulcers. The identification of an h. Pylori gene that Promotes the development of duodenal ulcers has led in the development of a novel Marker that may be used to identify persons who are at a higher risk of developing Duodenal ulcers while simultaneously being at a reduced risk of gastric atrophy and Cancer. The bulk of predisposing factors, on the other hand, are host-oriented, which means they are dependent on the patient's genetic features. ^[27]

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