

RECENT TRENDS OF TREATMENT AND MEDICATION PEPTIC ULCERATIVE DISORDER

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ABSTRACT: Most peptic ulcers can be healed with proper treatment. Research has found that the majority of peptic ulcers are caused by an infection with a bacterium called *Helicobacter pylori* (*H. pylori*), and standard treatment in these cases is a combination of drugs, including antibiotics and a proton pump inhibitor. Peptic ulcers are open sores or erosions in the lining of either the duodenum (duodenal ulcers) or the stomach (gastric ulcers). The duodenum is the first part of the small intestine. Contrary to popular belief, ulcers are not caused by spicy food or stress but instead are most commonly due to either an infection or long-term use of certain medications. The main goals for treating a peptic ulcer include eliminating the underlying cause (particularly *H. pylori* infection or use of NSAIDs), preventing further damage and complications, and reducing the risk of recurrence. The discovery of the link between ulcers and *H. pylori* has resulted in a new treatment option. Now, in addition to treatment aimed at decreasing the production of stomach acid, doctors may prescribe antibiotics for patients with *H. pylori*. By eliminating *H. pylori* means the ulcer may now heal and most likely will not come back. However, antibiotics alone are not used to treat *H. pylori*. The most commonly recommended first-line treatment is a combination of a proton pump inhibitor and the antibiotics amoxicillin and clarithromycin for two weeks. In penicillin allergic people, a drug called metronidazole is sometimes substituted for the amoxicillin. Medication is almost always needed to alleviate symptoms and must be used to eradicate *H. pylori*. Surgery is required for certain serious or life-threatening complications of peptic ulcers and may be considered if medications are not working.

Key words: Peptic Ulcerative Disorder.

INTRODUCTION

Peptic ulcer is a lesion in the mucosa of the stomach or duodenum in which acid and pepsin play a major role, the term is often used to encompass any gastric or duodenal ulceration. This includes ulceration that may occur from drugs (NSAIDs) or excessive gastrin production (Zollinger-Ellison syndrome). Peptic ulcer disease is common. It usually presents after the age of 15 and is equally common in both sexes. The currently most widely accepted causative agent is *H. pylori*. Approximately 95% of duodenal ulcers and 70% of gastric ulcers are associated with *H. pylori* (but only 15% of *H. pylori* colonized individuals will develop peptic ulcer disease). The odds of developing peptic ulceration are increased 2-fold in *H. pylori* positive patients. Peptic ulceration is also more common in patients on NSAIDs (Non Steroidal Anti Inflammatory Drugs) (36%) as compared to patients who are not on NSAIDs (8%) in clinical studies. Weaker associations of peptic ulcer disease include smoking, alcohol,

family history and blood group O. Ideally patients should stop taking NSAIDs, but often this may not be possible; alternatives include the concomitant long-term use of a proton pump inhibitor. General advice involves stopping smoking and reducing alcohol intake, but there is little evidence to support the efficacy of these recommendations. First-line triple therapy for *H. pylori* eradication consists of a proton pump inhibitor with either clarithromycin and amoxicillin or clarithromycin and metronidazole. Although many combinations and treatment durations have been proposed, the most effective are the twice-daily dosing, 1-week duration regimens such as omeprazole 20 mg twice daily, amoxicillin 1 g twice daily and clarithromycin 500 mg twice daily. Initial eradication regimens progressively change due to failure rates associated with the development of antibiotic-resistant strains of *H. pylori*. Currently metronidazole-resistant strains are common and clarithromycin resistance is increasing. Dual therapy

often fails to eradicate *H. pylori* and promotes emergence of resistant organisms. Rescue therapy for failed initial eradication should consist of a different combination of antibiotics to that used for initial treatment, administered for 10-14 days. Selection of further antibiotic treatment should be based on antimicrobial susceptibilities from primary or secondary endoscopy biopsy culture results. A proton pump inhibitor is currently the standard treatment, and part of triple therapy. Thereafter, symptomatic patients, those with complicated peptic ulcer disease (presenting with bleeding, stricture or perforation) and those patients who require NSAIDs may still require long-term proton pump inhibitor therapy. Intermittent on-demand therapy is suitable for patients without complications for the control of symptoms. Peptic ulcer surgery is now extremely rare for failed medical therapy due to the powerful acid suppression by proton pump inhibitors. Currently surgery is usually reserved for the development of complications such as perforation, severe bleeding and rarely stricture formation. In patients with gastric or duodenal perforation, a primary repair is usually performed on laparotomy. A pyloroplasty to increase the diameter of the gastric outlet may be performed for patients with pyloric stenosis due to peptic stricture. A longitudinal incision is performed through the pylorus and closed as a transverse defect. Alternatively, a gastroenterostomy may be performed to bypass the narrowed pylorus. Gastrectomy is rarely performed unless there is evidence of malignancy. Peptic ulcer disease is a chronic relapsing condition. Symptom control with proton pump inhibitor therapy is usually achieved in the vast majority. Up to 15% may suffer with upper gastrointestinal haemorrhage requiring hospital admission, and less than 5% will require surgical intervention. Peptic ulcer disease refers to an erosion in the inner lining of the stomach or the first part of the small intestine called the duodenum. Specifically, these erosions penetrate as deep as the muscular layer of the gastrointestinal tract. The condition affects men and women equally with a lifetime prevalence of 10%. Treatment of peptic ulcer disease requires removal of the cause. Smoking and NSAIDs should be stopped if they are identified as likely causative factors. If *H. pylori* is involved, treatment involves a proton-pump inhibitor medication, such as omeprazole (Prilosec), and two antibiotics, which may include clarithromycin, amoxicillin, or metronidazole. Surgery, less commonly performed as a result of improved medication regimens for *H. pylori*, is generally reserved for cases of perforated ulcers. The goal of ulcer treatment is to relieve pain and to prevent ulcer complications, such as bleeding, obstruction, and perforation. The first step in treatment involves the reduction of risk factors (NSAIDs and cigarettes). The next step is medications. Antacids neutralize existing acid in the stomach.

Antacids such as Maalox, Mylanta, and Amphojel are safe and effective treatments. However, the neutralizing action of these agents is short-lived, and frequent dosages are required. Magnesium containing antacids, such as Maalox and Mylanta, can cause diarrhea, while aluminum agents like Amphojel can cause constipation. Ulcers frequently return when antacids are discontinued. Studies have shown that a protein in the stomach called histamine stimulates gastric acid secretion. Histamine antagonists (H2 blockers) are drugs designed to block the action of histamine on gastric cells, hence reducing acid output. Examples of H2 blockers are cimetidine (Tagamet), ranitidine (Zantac), nizatidine (Axid), and famotidine (Pepcid). While H2 blockers are effective in ulcer healing, they have limited role in eradicating *H. pylori* without antibiotics. Therefore, ulcers frequently return when H2 blockers are stopped. Generally, these drugs are well tolerated and have few side effects even with long term use. In rare instances, patients report headache, confusion, lethargy, or hallucinations. Chronic use of cimetidine may rarely cause impotence or breast swelling. Both cimetidine and ranitidine can interfere with body's ability to handle alcohol. Patients on these drugs who drink alcohol may have elevated blood alcohol levels. These drugs may also interfere with the liver's handling of other medications like Dilantin, Coumadin, and theophylline. Frequent monitoring and adjustments of the dosages of these medications may be needed. Proton-pump inhibitors such as omeprazole (Prilosec), lansoprazole (Prevacid), pantoprazole (Protonix), esomeprazole (Nexium), and rabeprazole (Aciphex) are more potent than H2 blockers in suppressing acid secretion. Different proton-pump inhibitors are very similar in action and there is no evidence that one is more effective than another in healing ulcers. While proton-pump inhibitors are comparable to H2 blockers in effectiveness in treating gastric and duodenal ulcers, it is superior to H2 blockers in treating esophageal ulcers. Esophageal ulcers are more sensitive than gastric and duodenal ulcers to minute amounts of acid. Therefore, more complete acid suppression accomplished by proton-pump inhibitors are important for esophageal ulcer healing. Proton-pump inhibitors are well tolerated. Side effects are uncommon; they include headache, diarrhea, constipation, nausea and rash. Interestingly, proton-pump inhibitors do not have any effect on a person's ability to digest and absorb nutrients. Proton-pump inhibitors have also been found to be safe when used long term, without serious adverse health effects reported. Sucralfate (Carafate) and misoprostol (Cytotec) are agents that strengthen the gut lining against attacks by acid digestive juices. Carafate coats the ulcer surface and promotes healing. The medication has very few side effects. The most common side effect is constipation and the interference with the absorption of other medications. Cytotec is a

prostaglandin-like substance commonly used to counteract the ulcer effects of NSAIDs. Studies suggest that Cytotec may protect the stomach from ulceration in those who take NSAIDs on a chronic basis. Diarrhea is a common side effect. Cytotec can cause miscarriages when given to pregnant women, and should be avoided by women of childbearing age. Many people harbor *H. pylori* in their stomachs without ever having pain or ulcers. It is not completely clear whether these patients should be treated with antibiotics. More studies are needed to answer this question. Patients with documented ulcer disease and *H. pylori* infection should be treated with antibiotic combinations. *H. pylori* can be very difficult to completely eradicate. Treatment requires a combination of several antibiotics, sometimes in combination with a proton-pump inhibitor, H2 blockers or Pepto-Bismol. Commonly used antibiotics are tetracycline, amoxicillin, metronidazole (Flagyl), clarithromycin (Biaxin), and levofloxacin (Levaquin). Eradication of *H. pylori* prevents the return of ulcers (a major problem with all other ulcer treatment options). Elimination of this bacteria may also decrease the risk of developing gastric cancer in the future. Treatment with antibiotics carries the risk of allergic reactions, diarrhea, and sometimes severe antibiotic-induced colitis (inflammation of the colon). There is no conclusive evidence that dietary restrictions and bland diets play a role in ulcer healing. No proven relationship exists between peptic ulcer disease and the intake of coffee and alcohol. However, since coffee stimulates gastric acid secretion, and alcohol can cause gastritis, moderation in alcohol and coffee consumption is often recommended.

CAUSES OF PEPTIC ULCER^{8,11}

When the stomach's natural protections from the damaging effects of digestive juices (including acid

and pepsin, an enzyme that helps breakdown protein) stop working or the acid production is too overwhelming for these protective defenses to work properly, you can get an ulcer. There are a few different ways this happens.

- ❖ *Helicobacter pylori* (*H. pylori*) -- *H. Pylori*, a bacterial organism, is responsible for most ulcers. This organism weakens the protective coating of the stomach and duodenum and allows the damaging digestive juices to irritate the sensitive lining below. Interestingly, as many as 20% of Americans over age 40 have this organism living in their digestive tract, but not all of these people develop ulcers -- most do not.
- ❖ Non-steroidal anti-inflammatory drugs (NSAIDs) - ongoing use of this class of medications is the second most common cause of ulcers. These drugs (which include aspirin, ibuprofen, naproxen, diclofenac, tolmetin, piroxicam, fenoprofen, indomethacin, oxaprozin, ketoprofen, sulindac, nabumetone, etodolac, and salsalate) are acidic. They block prostaglandins, substances in the stomach that help maintain blood flow and protect the area from injury. Some of the specific drugs listed are more likely to produce ulcers than others. Therefore, if you must use long-term pain medications, talk to your doctor about which ones are safest.
- ❖ Zollinger-Ellison syndrome -- people with this uncommon condition have tumors in the pancreas and duodenum that produce gastrin, a hormone that stimulates gastric acid production. Diarrhea may precede ulcer formation.
- ❖ Other causes of ulcers are conditions that can result in direct damage to the wall of the stomach or duodenum, such as heavy use of alcohol, radiation therapy, burns, and physical injury.

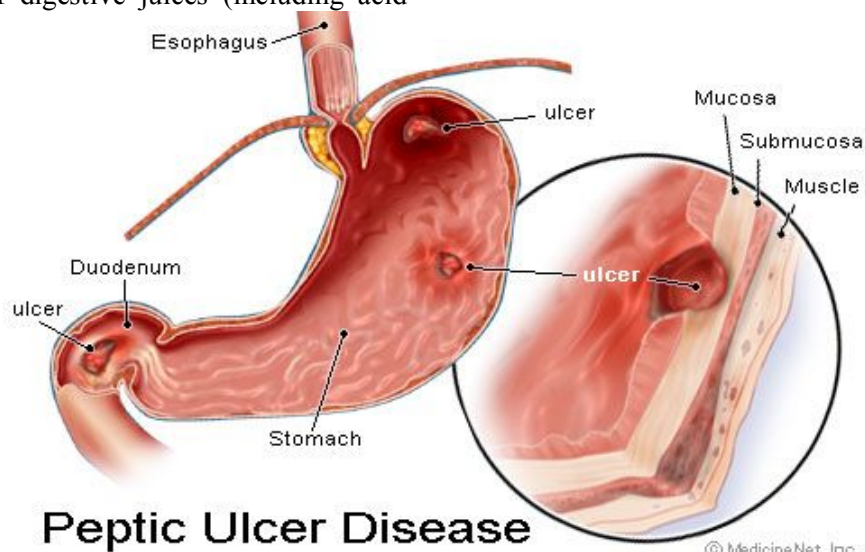


FIGURE-PEPTIC ULCER DISEASE

SYMPTOMS^{5,6,7}

Peptic ulcers are open sores that develop on the inside lining of your stomach, upper small intestine or esophagus. The most common symptom of a peptic ulcer is abdominal pain. It wasn't too long ago that lifestyle factors, such as a love of spicy foods or a stressful job, were thought to be at the root of most peptic ulcers. Doctors now know that a bacterial infection or some medications — not stress or diet — cause most peptic ulcers. Burning pain is the most common peptic ulcer symptom. The pain is caused by the ulcer and is aggravated by stomach acid coming in contact with the ulcerated area. The pain typically may:

- 1) Be felt anywhere from your navel up to your breastbone
- 2) Last from a few minutes to several hours
- 3) Be worse when your stomach is empty
- 4) Flare at night
- 5) Often be temporarily relieved by eating certain foods that buffer stomach acid or by taking an acid-reducing medication
- 6) Disappear and then return for a few days or weeks
- 7) Less often, ulcers may cause severe signs or symptoms such as:
- 8) The vomiting of blood — which may appear red or black
- 9) Dark blood in stools or stools that are black or tarry
- 10) Nausea or vomiting
- 11) Unexplained weight loss
- 12) Appetite changes

PEPTIC ULCERS ARE DIVIDED INTO ACUTE AND CHRONIC ULCERS -**Acute peptic ulcers****Etiology**

- ❖ Half of the patients give history of ingestion of aspirin or anti-inflammatory drugs.
- ❖ Sometimes these acute ulcers may occur following stress, when they are called 'stress ulcers'. This may occur following hypotension from hemorrhage, endotoxin shock or cardiac infarction.
- ❖ Sepsis is an important etiological factor. Undrained pus may be responsible for acute stress ulcers. Upper gastrointestinal bleeding from these ulcers may be seen in critically ill patient and should be a signal of search for pus.
- ❖ These acute ulcers are seen after cerebral trauma or neurological operations.
- ❖ After major burns acute ulcers may be seen (Curling's ulcer). Within first 48hrs multiple erosions may develop anywhere in the body and fundus of the stomach. During convalescent period of such burn cases, acute duodenal ulcer may occur which often become chronic.

- ❖ Patients on steroids may develop acute ulcers, known as 'steroid ulcers'.

CHRONIC PEPTIC ULCERS ARE DIVIDED INTO GASTRIC ULCER AND DUODENAL ULCER^{5,20,21}**Gastric ulcer**

- ❖ Diminished mucosal resistance - due to lowering of the ability to resist the effect of acid pepsin digestion causes gastric ulcer.
- ❖ Pyloro-duodenal reflux - Regurgitated bile and other duodenal juices have been taken to be the prime cause of pre-ulcerative superficial gastritis. Such biliary reflux may account for a large number of gastric ulcer cases.
- ❖ Deficient mucous barrier - A surface layer of mucus protects normally from the digestive effect of the hydrochloric acid and pepsin. When this mucous barrier becomes deficient gastric ulcer may develop. Most cases of gastric ulcers produce large quantities of mucus.
- ❖ Mucosal trauma - 85% of gastric ulcers occur along the lesser curve of the stomach. This part of the stomach is exposed to injurious effects of heat and trauma.
- ❖ Local ischemia - arterio-venous shunts which are present in the sub-mucosa of the stomach are under control of sympathetic nervous system and excessive stress and strain may cause diminution of blood supply to the mucous membrane of the stomach leading to ulcer formation.
- ❖ antral stasis - As the gastric ulcer patients have low acid content some factor such as injury to the gastric mucosa which renders it more susceptible to acid peptic damage may lead to ulcer formation.
- ❖ Non-steroidal anti-inflammatory drugs (NSAIDs) - ingestion of these drugs in patient suffering from arthritis as a long term basis are a significant etiologic factor at present time. The drugs of this group are often called as ulcerogenic drugs.
- ❖ Helicobacter pylori - it is a spirochetal bacterium which exists in the deep mucosal layer of the antrum mainly and duodenum rarely is associated with ulcer disease.

Duodenal ulcers

- ❖ Acid hyper-secretion - Duodenal ulcer is seemingly simplified at first sight by a clear relationship to over-production of hydrochloric acid by the stomach.
- ❖ Genetic factors - in a great number of cases the acid production may be within the high side of the normal range and in these cases ulceration cannot be explained except the diminished mucosal resistance to normal acid secretion. Diminished power of resistance of the mucosa has also been incriminated to cause duodenal ulcer. There is a significant relationship between blood group 'O' and the development of duodenal ulcer.

- ❖ Endocrine organ dysfunction - There are various endocrine dysfunction (Cushing's syndrome, Zollinger-Ellison syndrome, parathyroid tumor etc) can cause duodenal ulcer.
- ❖ Liver disease - Ulceration of both stomach and duodenum has co-existed with disease of the liver particularly cirrhosis. It may be due to increase in blood supply to the gastric mucosa and over-production of histamine in the stomach wall to stimulate the parietal cells.
- ❖ Emotional factors - Anxiety, stress and strain have always been incriminated to cause peptic ulcer.
- ❖ Diet and smoking - Irregular diet, spicy food and excessive drinking tea and coffee have always provoked ulcer formation. Smoking does appear to predispose ulcer formation. The exact cause is not yet clearly understood, but it seems that smoking diminishes mucosal defense mechanism almost similar to NSAIDs.
- ❖ *Helicobacter pylori* - it has been isolated in 100% of duodenal ulcer cases. Its eradication has definitely led to decrease in recurrence rate and this clearly indicates its importance in the etiology of duodenal ulcer.

RISK FACTORS

- 1) Genetic factors may predispose you to developing an ulcer
- 2) Increasing age
- 3) Chronic pain, from any cause such as arthritis, fibromyalgia, repetitive stress injuries (like carpal tunnel syndrome), or persistent back pain, leading to ongoing use of aspirin or NSAIDs
- 4) Alcohol abuse
- 5) Diabetes may increase your risk of having *H. pylori*
- 6) Living in crowded, unsanitary conditions increases the risk of *H. pylori* infection
- 7) Immune abnormalities may, in theory, make it more likely for *H. pylori* or other factors to cause damage to the lining of the stomach or duodenum
- 8) Lifestyle factors, including chronic stress, coffee drinking (even decaf), and smoking, may make you more susceptible to damage from NSAIDs or *H. pylori* if you are a carrier of this organism. Again, however, these factors do not cause an ulcer on their own.

DIAGNOSIS:^{8,11}

First, doctor will take a detailed history of your symptoms and risk factors, including how long indigestion and pain have been present, how strong these sensations are, if you have lost weight recently, what medications (over the counter and prescription) you have been taking, your smoking and drinking habits, and if anyone in your family has had ulcers. As part of the physical exam, your doctor will do a thorough check of your abdomen and chest as well as a

rectal exam to look for, in part, any sign of bleeding. A blood test will be drawn to check to see if you are anemic. These types of tests are done to make sure that you have not had any bleeding about which you have been unaware (called occult bleeding). If there are no signs of bleeding and your symptoms are mild and not serious or life-threatening, your doctor may have you try medications that suppress the amount of acid in your stomach. This is done to see if you feel better, before pursuing expensive and uncomfortable testing. If your symptoms persist or get worse despite the medication, further testing is necessary.

One of two tests will be performed to try to identify an ulcer:

- Upper gastrointestinal (GI) series
- Endoscopy

For an upper GI series, you will drink a chalky liquid called barium and then undergo a series of x-rays to check for an ulcer.

Endoscopy, a more accurate test, involves the careful insertion of a thin tube with a tiny camera at the end (called an endoscope) into your mouth, down your throat, through the esophagus to the stomach and duodenum. This allows both direct visualization of these organs for an ulcer or other problems and sampling of tissue from the walls (called biopsies) of the stomach and small intestines to test for *H. pylori*. You are lightly sedated for this procedure.

Other tests that may be performed to look for *H. pylori* include a blood test checking for antibodies to this organism, a breath test after drinking a substance called urea, and a stool test looking for the organism in the feces. The breath test, which is the least invasive, is proving to be at least 95% accurate.

Lifestyle

Doctors used to recommend eating bland foods with milk and only small amounts of food with each meal. We now know that these eating habits are not necessary for the treatment of ulcers. Dietary and other lifestyle measures that should help, however, include:

- ❖ Eat a diet rich in fiber, especially from fruits and vegetables. This may reduce your risk of developing an ulcer in the first place and may speed your recovery if you already have one. The vitamin A may be an added benefit from these foods.
- ❖ Foods containing flavonoids, like apples, celery, cranberries (including cranberry juice), onions, garlic, and tea may inhibit the growth of *H. pylori*.
- ❖ Quit smoking.
- ❖ Receive treatment for alcohol abuse; your doctor can help get you appropriate care.
- ❖ Cut down on coffee, including decaffeinated coffee, as well as carbonated beverages all of which can increase stomach acid.

- ❖ Reduce stress with regular use of relaxation techniques, such as yoga, tai chi, qi gong, or meditation. These practices may also help lessen pain and reduce your need for the damaging NSAIDs discussed. To incorporate any one of these techniques into your daily activities, consider taking a class; some early information suggests that, if you have an ulcer, a formal stress reducing program may be more beneficial than listening to tapes on your own at home.

TREATMENT OF PEPTIC ULCER^{22,23}

Initial treatment

Initial treatment of peptic ulcer disease depends on its cause.

***H. pylori* infection.** Treatment to eliminate *Helicobacter pylori* (*H. pylori*) bacteria usually involves combining two antibiotics with an acid reducer such as a proton pump inhibitor or sometimes a bismuth compound. Curing the infection speeds the healing of an ulcer and makes the ulcer less likely to recur. It is important to take all the medicine your doctor prescribes so that the bacteria are killed and do not come back. Do not stop taking the medicine just because you feel better. If the bacteria are not eliminated by the antibiotics, they may become even more difficult to kill later (resistant).

NSAIDs. If at all possible, you will need to stop taking nonsteroidal anti-inflammatory drugs (NSAIDs). If you must continue taking an NSAID, other medicines may be used to protect the stomach. For more information, see the Medications section of this topic.

Hypersecretory condition. Acid reducers are most often used to treat an ulcer caused by a hypersecretory condition (a condition in which your stomach produces excessive acid). In addition, your doctor may want to conduct other tests to determine whether there is another cause for the ulcer.

Unknown cause. If no cause can be found (idiopathic ulcer), your ulcer will usually be treated with an acid reducer. Long-term treatment depends on the severity of the ulcer and other factors, such as the size of the ulcer, whether you have had complications, and what other treatments have been used.

No matter what is causing your ulcer, it is important to stop taking NSAIDs and to quit smoking.

Ongoing treatment

If you feel that you need to continue to use nonsteroidal anti-inflammatory drugs (NSAIDs) after being diagnosed with a peptic ulcer, work with your doctor to find an alternative pain reliever. Use of NSAIDs can slow the healing of an ulcer or prevent it from healing altogether. If you must continue to use NSAIDs, your doctor may recommend that you take a prostaglandin analog, such as misoprostol, or a proton pump inhibitor. Misoprostol does not help ulcers heal, but it can help prevent ulcers from coming back.

If ulcer symptoms do not respond to treatment, follow up with your doctor to be sure *Helicobacter pylori* (*H. pylori*) bacteria have been identified and treated. Most peptic ulcers are caused by infection with *H. pylori* bacteria. Persistent infection will likely be treated with an alternate combination of medicines. Antibiotic treatment for *H. pylori* should be taken exactly according to your doctor's instructions for it to be effective.

Tests such as the urea breath test and a stool antigen test can determine whether an *H. pylori* infection has been cured. If you have a history of ulcer complications or a family history of stomach cancer, you may need an endoscopy so that your doctor can look at the inside of your stomach and upper small intestine to see whether an ulcer is present. An endoscopy can also be used to collect a tissue sample (biopsy) that can be tested for *H. pylori* or cancer. For more information on these tests, see the Exams and Tests section of this topic.

MEDICATIONS

If you have *H. pylori*, you will probably be prescribed three different medications. "Triple therapy" (including a proton pump inhibitor, such as omeprazole or Prilosec, to reduce acid production and two antibiotics to get rid of the organism) is commonly used to treat *H. pylori*-related ulcers. A medicine called bismuth salicylate may be recommended in place of one antibiotic. This drug, available over the counter, coats and soothes the stomach, protecting it from the damaging effects of acid. Two drug regimens are currently being developed.

Some of the same drugs are used for non-*H. pylori* ulcers as well as for symptoms (like indigestion) due to ulcers of any cause:

- ❖ Antacids, available over the counter, may relieve heartburn or indigestion but will not treat an ulcer. Antacids include aluminum hydroxide (Amphojel, AlternaGEL), magnesium hydroxide (Phillips' Milk of Magnesia), aluminum hydroxide and magnesium hydroxide (Maalox, Mylanta), calcium carbonate (Rolaids, Titalac, Tums), and sodium bicarbonate (Alka-Seltzer). Antacids may block medications from being absorbed and thereby decrease the medicine's effectiveness. It is recommended to take antacids at least 1 hour before or 2 hours after taking medications. Ask your pharmacist or doctor for more information.
- ❖ H₂ blockers, such as cimetidine (Tagemet), ranitidine (Zantac), nizatidine (Axid®), and famotidine (Pepcid), reduce gastric acid secretion.
- ❖ Proton-pump inhibitors, including esomeprazole (Nexium), lansoprazole (Prevacid), omeprazole (Prilosec), pantoprazole (Protonix), and rabeprazole (Aciphex), decrease gastric acid production.

- ❖ Sucralfate (Carafate) makes a coating over the ulcer crater, protecting it from further damage.

SURGERY AND OTHER PROCEDURES²⁷

Once hospitalized, if bleeding from an ulcer does not stop by using medications and supportive care (like fluids and, possibly, blood transfusion), it can almost always be stopped via endoscopy. The physician (a gastroenterologist) who performs the procedure first identifies the ulcer and the area that is bleeding. The physician will then inject adrenaline and other medications to stop the bleeding and stimulate the formation of a blood clot. If the bleeding recurs after that procedure or you have a perforated ulcer or an obstruction, surgery may be required. If you do not get better from medical or endoscopic treatment, surgery may be considered. About 30% of people who come to the hospital with a bleeding ulcer need endoscopy or surgery.

NUTRITION AND DIETARY SUPPLEMENTS^{7,11}

Following these nutritional tips may help reduce symptoms:

- ❖ Foods containing flavonoids, like apples, celery, cranberries (including cranberry juice), onions, garlic, and tea may inhibit the growth of *H. pylori*.
- ❖ Eat antioxidant foods, including fruits (such as blueberries, cherries, and tomatoes), and vegetables (such as squash and bell peppers).
- ❖ Eat foods high in B-vitamins and calcium, such as almonds, beans, whole grains (if no allergy), dark leafy greens (such as spinach and kale), and sea vegetables.
- ❖ Avoid refined foods, such as white breads, pastas, and especially sugar.
- ❖ Eat fewer red meats and more lean meats, cold-water fish, tofu (soy, if no allergy) or beans for protein.
- ❖ Use healthy oils, such as olive oil or vegetable oil.
- ❖ Reduce or eliminate trans-fatty acids, found in commercially baked goods such as cookies, crackers, cakes, French fries, onion rings, donuts, processed foods, and margarine.
- ❖ Avoid beverages that can irritate the lining of the stomach or increase acid production, including coffee (with or without caffeine), alcohol, and carbonated beverages.
- ❖ Drink 6 - 8 glasses of filtered water daily.
- ❖ Exercise at least 30 minutes daily, 5 days a week.
- ❖ You may address nutritional deficiencies with the following supplements:
- ❖ A multivitamin daily, containing the antioxidant vitamins A, C, E, the B-vitamins, and trace minerals, such as magnesium, calcium, zinc, and selenium.
- ❖ Omega-3 fatty acids, such as fish oil, 1 - 2 capsules or 1 tablespoonful oil 2 - 3 times daily, to help decrease inflammation and improve immunity. Cold-water fish, such as salmon or

halibut, are good sources, but supplementation is recommended.

- ❖ Probiotic supplement (containing *Lactobacillus acidophilus*), 5 - 10 billion CFUs (colony forming units) a day, for maintenance of gastrointestinal and immune health. Some probiotic supplements may need to be refrigerated for best results. Your child may also take probiotic supplements. Talk to your health care provider before giving your child any dietary supplements.
- ❖ Alpha-lipoic acid, 25 - 50 mg twice daily, for antioxidant support.
- ❖ Vitamin C, 500 - 1,000 mg 1 - 3 times daily, as an antioxidant and for immune support.
- ❖ L-glutamine, 500 - 1,000 mg 3 times daily, for support of gastrointestinal health and immunity.
- ❖ Grapefruit seed extract (*Citrus paradisi*), 100 mg capsule or 5 - 10 drops (in favorite beverage) 3 times daily when needed, for antibacterial, antifungal, and antiviral activity, and for immunity.
- ❖ Resveratrol (from red wine), 50 - 200 mg daily, to help decrease inflammation and for antioxidant effects.

HERBS^{1,10}

Herbs are generally a safe way to strengthen and tone the body's systems. As with any therapy, you should work with your health care provider to get your problem diagnosed before starting any treatment. You may use herbs as dried extracts (capsules, powders, teas), glycerites (glycerine extracts), or tinctures (alcohol extracts). Unless otherwise indicated, you should make teas with 1 tsp. herb per cup of hot water. Steep covered 5 - 10 minutes for leaf or flowers, and 10 - 20 minutes for roots. Drink 2 - 4 cups per day. You may use tinctures alone or in combination as noted.

- ❖ Green tea (*Camelia sinensis*) standardized extract, 250 - 500 mg daily, for antioxidant, anti-inflammatory, and heart health effects. Use caffeine-free products. You may also prepare teas from the leaf of this herb.
- ❖ Cat's claw (*Uncaria tomentosa*) standardized extract, 20 mg 3 times a day, for inflammation and antibacterial, or antifungal activity.
- ❖ Reishi mushroom (*Ganoderma lucidum*), 150 - 300 mg 2 - 3 times daily, for inflammation and for immunity. You may also take a tincture of this mushroom extract, 30 - 60 drops 2 - 3 times a day.
- ❖ Olive leaf (*Olea europaea*) standardized extract, 250 - 500 mg 1 - 3 times daily, for antibacterial or antifungal activity and immunity. You may also prepare teas from the leaf of this herb.
- ❖ DGL-licorice (*Glycyrrhiza glabra*) standardized extract, 250 - 500 mg 3 times daily, chewed either 1 hour before or 2 hours after meals. Glycyrrhizin is a chemical found in licorice that causes side

effects and drug interactions. DGL is deglycyrrhizinated licorice, or licorice with the glycyrrhizin removed.

- ❖ Mastic (*Pistacia lentiscus*) standardized extract, 1,000 - 2,000 mg daily in divided dosages, for activity against *H. Pylori*.
- ❖ Peppermint (*Mentha piperita*) standardized, enteric coated tablet, 1 tablet 2 - 3 times daily, for symptoms of peptic ulcer. Each tablet contains 0.2 ml peppermint oil.

HOMEOPATHY²⁴

Although few studies have examined the effectiveness of specific homeopathic therapies, professional homeopaths may consider the following remedies for the treatment of ulcers or its symptoms, based on their knowledge and experience. Before prescribing a remedy, homeopaths take into account a person's constitutional type -- your physical emotional, and intellectual makeup. An experienced homeopath assesses all of these factors when determining the most appropriate treatment for you individually. For the treatment of ulcers, even if you do seek homeopathic remedies as adjunctive care, conventional treatment recommendations must be followed.

- ❖ *Argentum nitricum* for abdominal bloating with belching and pain
- ❖ *Arsenicum album* for ulcers with intense burning pains and nausea; especially for people who cannot bear the sight or smell of food and are thirsty
- ❖ *Kali bichromicum* for burning or shooting abdominal pain that is worse in the hours after midnight
- ❖ *Lycopodium* for bloating after eating with burning that lasts for hours; especially for people who feel hungry soon after eating and wake hungry
- ❖ *Nitric acid* for sharp, shooting pain that worsens at night and is accompanied by feelings of hopelessness and even fear of dying
- ❖ *Nux vomica* for digestive disturbances (including heartburn and indigestion) that worsen after eating; particularly for those who crave alcohol, coffee, and tobacco
- ❖ *Phosphorus* for burning stomach pain that worsens at night; those for whom this remedy is appropriate tend to feel very thirsty, craving cold beverages
- ❖ *Pulsatilla* for symptoms that vary (that is, change abruptly) and pain that gets worse from fatty foods; appropriate people are distinctly not thirsty

Acupuncture

Acupuncture has been used traditionally for a variety of conditions related to the gastrointestinal tract, including peptic ulcers. A growing body of scientific evidence suggests that acupuncture can help reduce pain associated with endoscopy (the procedure used, as described earlier, to make a diagnosis of ulcer or to treat its complications).

CHIROPRACTIC

Chiropractors report and preliminary evidence suggests that spinal manipulation may benefit some individuals with uncomplicated gastric or duodenal ulcers. In one small clinical study, researchers compared the effectiveness of medication to spinal manipulation over a period of up to 22 days. Participants who received spinal manipulation experienced significant pain relief after an average of 4 days and were completely free of symptoms on average 10 days earlier than those who took medication. More research is needed to understand when and how chiropractic might be helpful if you have peptic ulcer disease.

Other Considerations:

Pregnancy

If you are pregnant or breastfeeding, talk to your doctor before taking any medication, including herbs.

Prognosis and Complications

With proper treatment, most ulcers heal within 6 - 8 weeks. However, they may recur, particularly if *H. pylori* is not treated sufficiently.

Complications from ulcers include bleeding, perforation (rupture) of either the stomach or the duodenum, and bowel obstruction. Each of these problems can be very serious, even life-threatening. Bleeding, which is much less common today because of appropriate and fast medical treatment, occurs in up to 15% of people with peptic ulcers. Obstruction tends to happen where the stomach meets the small intestines. If there is an ulcer at this junction, swelling can occur, blocking the passage of food products through the gastrointestinal tract. If this happens, significant vomiting is generally the main symptom.

H. pylori ulcers increase the risk of stomach cancer.

The good news is that the incidence of ulcers and their complications continue to decline as people seek treatment for symptoms early and doctors respond quickly to eliminate symptoms and the causes, like *H. pylori* and NSAIDs.

COMPLICATIONS

- ❖ **Internal bleeding.** Bleeding can occur as slow blood loss that leads to anemia or as severe blood loss that may require hospitalization or a blood transfusion.
- ❖ **Infection.** Peptic ulcers can eat a hole through the wall of your stomach or small intestine, putting you at risk of serious infection of your abdominal cavity (peritonitis).
- ❖ **Scar tissue.** Peptic ulcers can also produce scar tissue that can obstruct passage of food through the digestive tract, causing you to become full easily, to vomit and to lose weight.

HOME REMEDY FOR PEPTIC ULCER^{24,27}

- ❖ The most effective home remedy for treating peptic ulcer is to eat bananas everyday. It is an excellent way to neutralize the hyperacidity of the gastric juices. Banana milk shake is also beneficial in curing peptic ulcer.
- ❖ Having cold milk, without sugar, is effective in reducing the acid, thereby providing relief from burning sensation one encounters in peptic ulcer.
- ❖ Prepare a paste of 10 grams drumsticks leaves and water. Mix this paste in half a cup of yoghurt. Have this mixture everyday, to cure peptic ulcer.
- ❖ In 250 ml of water, soak 15 grams leaves of wood apple and keep it overnight. Strain this concoction in the morning and have it.
- ❖ Applying a hot pack over the abdomen region is one of the effective ways of curing peptic ulcer.
- ❖ Cabbage and carrot, when mixed as juices, have been found to be beneficial in treating peptic ulcer. In half a liter of water, boil 250 grams cabbage until it is reduced to half. In a similar way, prepare carrot juice. Now, combine 125 ml of each juice. Once cool, drink it two times in a day.
- ❖ Tea made from fenugreek seeds is effective in curing peptic ulcer. When coated with water, fenugreek seeds become slightly mucilaginous, which helps in treating the ulcer.
- ❖ Combining carrot juice with spinach (or beet) and cucumber is effective in treating peptic ulcer. You can either mix 300ml carrot juice and 200 ml spinach juice or combine 300 ml carrot juice and 100 ml each of beet and cucumber juice, to make 500 ml of juice. Consume this daily.
- ❖ Blanch 5 almonds everyday and extract their milk. Drink this milk everyday, as it provides protein and also binds the acid in stomach.
- ❖ Drinking raw goat milk is effective in peptic ulcers treatment. For best results, drink this juice three times a day.
- ❖ Lime is beneficial in curing peptic ulcer. The citric acid and mineral salts present in it help treat the ulcer. You can either have lime juice or use it in salads.

CONCLUSION

As community Pharmacist becomes a consultant for patients who are put on therapy. He counsels the patients about the disease process and simultaneously role of drugs. He informs the patient of drug interactions and adverse reactions. He advises the doctors about the dosage forms and dosage regimen. In the context of rendering better services to patients, the physicians have recognised a role of community pharmacist in clinical aspects. Peptic ulcers are breaks in the lining of the digestive tract caused by the action of gastric juices. There are two types of peptic ulcer: duodenal

and gastric (stomach). They cause pain, bloating, wind, vomiting and other forms of abdominal upset and discomfort. Ulcers may be short- or long-term, single or multiple, deep or superficial. More effective remedies for reducing acid levels in the stomach have become available over recent years and peptic ulcers are now uncommon. The current therapy of choice for all *Helicobacter pylori*-associated ulcer disease is eradication therapy. Although adequate therapeutic regimens are currently available, often still ineffective therapies are tried. Cure of the infection essentially eliminates the ulcer diathesis. Cure of the infection is especially indicated in complicated/recalcitrant ulcer disease. Sadly, at present only a minority of peptic ulcer disease patients receive adequate eradication therapy. Cure of the infection does not equal full resolution of dyspeptic symptoms. A variable percentage of patients continues acid suppressant therapy for ongoing or newly developed dyspeptic or reflux symptoms. Acid-suppressant therapy, both for healing and for maintenance, remains the cornerstone of peptic ulcer therapy in all other circumstances (*H. pylori*-negative ulcer, aspirin/NSAID-induced ulceration, hyperacidity related ulcer etc.). Proton pump inhibitors are superior to H₂RA_s both for healing and for maintenance. Whether higher doses are occasionally necessary in *H. pylori*-negative ulcers, requires further study. Acid-suppressant therapy, even when prolonged, so far appears safe and well tolerated. Proton pump medications (PPI). Proton pump medications reduce acid levels and allow the ulcer to heal. They include Prilosec, Prevacid, Aciphex, Protonix, and Nexium. Antibiotics. If you have *H. pylori* infection, then antibiotics are used. There are multiple combinations of antibiotics that are taken for one to two weeks along with a PPI. Some doctors also recommend taking Pepto-Bismol. Upper Endoscopy. Some bleeding ulcers can be treated through the endoscope. Surgery. Sometimes an operation is needed if the ulcer has created a hole in the wall of the stomach or if there is serious bleeding. Even with medications, many lifestyle factors, including making changes in your diet, are important. Plus, certain herbs, acupuncture, or homeopathy may prove to be a useful addition to usual medical care, especially to help relieve symptoms or prevent recurrence. A peptic ulcer is a sore in the lining of your stomach or your duodenum, the first part of your small intestine. A burning stomach pain is the most common symptom. The pain May come and go for a few days or weeks, May bother you more when your stomach is empty, Usually goes away after you eat. Peptic ulcers happen when the acids that help you digest food damage the walls of the stomach or duodenum. The most common cause is infection with a bacterium called *Helicobacter pylori*. Another cause is the long-term use of nonsteroidal anti-inflammatory medicines (NSAIDs) such as aspirin and ibuprofen. Stress and spicy foods

do not cause ulcers, but can make them worse. Peptic ulcers will get worse if not treated. Treatment may include medicines to block stomach acids or antibiotics to kill ulcer-causing bacteria. The Pharmaceutical Care is an important health care intervention which is mandatory for quality use of medicine. The Patients

are supposed to get all the practical information regarding the drugs they are prescribed by doctors. The community pharmacist is the globally accepted professional to cater the pharmaceutical care to the patients at the time of dispensing the medicine itself..

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