

An Exploration of Ulcer and Its Prevention Methods

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ABSTRACT

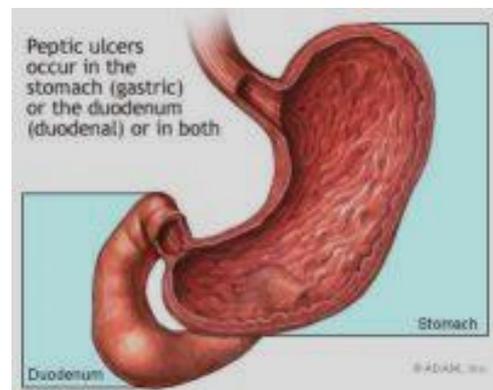
The disease is one of the important problems of the world and the number of patients suffering is growing day by day. An ulcer is eroded area of skin or a mucous membrane, marked by tissue disintegration. In common usage, however, ulcer usually used to refer to disorders in the upper digestive tract.

Keywords: HP, NSAIDs

I. INTRODUCTION

An ulcer is an open wound or breakage in the tissue of the skin, the mucous membranes or the lining of the stomach and intestines. The most common form of ulcer is stomach ulcer, otherwise known as peptic ulcer. It is generally caused due to infection by a bacterium, *Helicobacter pylori*. An ulcer is generally the result of an injury or infection in the concerned tissue. However, ulcers might also be a symptom of underlying causes such as deficiency of nutrients in the diet. Even a cancerous growth in the tissue can manifest itself as an ulcer. Thus, it is important to have a thorough understanding of the various forms of the disease, to be able to prevent its occurrence.

increase the risk of peptic ulcers. These include too much smoking and drinking, and exposure to radiation.



II. METHODS AND MATERIAL

A. Types of Ulcer

1. Peptic Ulcer

An ulcer affecting the lining of the walls of the stomach or the upper part of the small intestine is termed as peptic or gastric ulcer. Usually it affects the innermost layer or mucosa of the stomach. If, in rare cases, it affects the outer layers, it is termed as perforation.

Causes

Infection by the bacteria *Helicobacter pylori* (HP), is the most common cause. This bacterial infection damages the membranous lining of the stomach. They are also believed to be caused by excessive stress. In addition to the causes discussed, there are certain factors that

Symptoms

The most common symptom is a burning sensation in the abdomen. Following are a few more often reported symptoms

- Severe pain in the abdominal region
- Nausea or vomiting
- Loss of appetite
- Weight loss
- Blood in the feces

Treatment and Prevention

Peptic ulcers can be treated with antibiotics and proton pumps. In severe cases like perforation, surgery is the only mode of treatment. In addition to smoking and alcohol, patients diagnosed with this condition should avoid food that is spicy because it aggravates the symptoms of stomach ulcer.

2. Mouth ulcer:

Mouth ulcers, also known as canker sores, are most often caused by physical injury to the mucous membrane of the inner parts of the cheek and the gums.



Ulcers are painful sores that appear in the mouth.

Causes

Food allergy, stress, tissue injury (due to brushing, braces, or ill-fitting dentures), nutritional deficiency, gastrointestinal tract disease, consumption of medications including painkillers and beta-blockers., Bacterial or viral infection and deficiency of vitamin C.

Symptoms

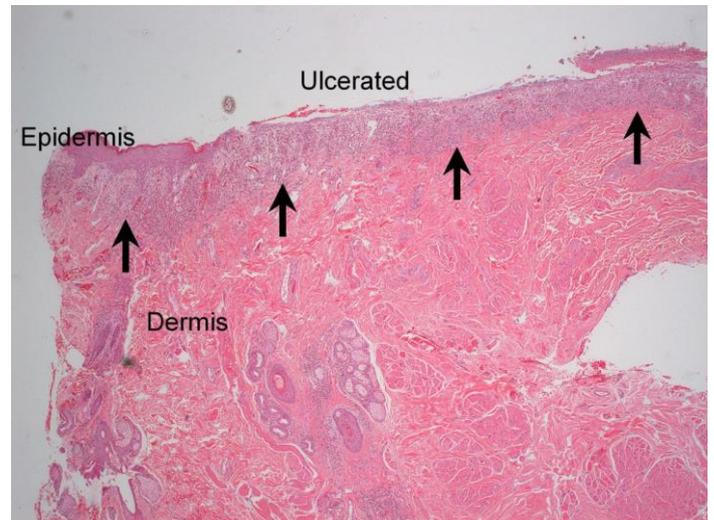
Pain, whitish or grayish sores with red round edges anywhere in the mouth, tenderness, loss of appetite, fever and swollen lymph nodes (in extreme cases).

Treatment

Usually, minor ulcers heal on their own within 2 to 3 weeks. If not, then a dentist may prescribe medications, including mouth rinse and ointments, to curb the problematic symptoms.

3. Skin Ulcer

Any open sore on the skin that does not heal easily is an ulcer. According to dermatologists, ulcer of the skin occurs in six stages.



Causes

Skin ulcers are the result of infections caused by microorganisms, skin cancer and poor blood circulation, especially in the extremities. Ulcers caused by poor blood circulation are a result of damaged valves in the veins. However, they are also seen in patients with high blood glucose levels. Pressure-induced skin ulcers or bedsores are seen in patients who are in a prolonged vegetative state, or who are bound to a wheelchair. In diabetics, wounds that remain untreated for a long time turn into ulcers.

Symptoms

The symptoms, as observed in the six stages, are as under

- *Stage 1:* Mild reddening of the skin
- *Stage 2:* Increased redness accompanied by blisters
- *Stage 3:* Death of cells of the outer layers of the skin, exposing the layer of adipose tissue beneath. This is termed as necrosis.
- *Stage 4:* Spread of infection to the deeper layers of the skin, destroying the layer of adipose tissue, and exposing the muscle tissue beneath
- *Stage 5:* Spread of infection to the muscle tissues
- *Stage 6:* Spread of ulceration to the bones and joints

Treatment and Prevention

Skin ulcers are primarily treated with antibiotics, which

prevent the spread of infection. However, if the cause is poor blood circulation, then doctors prescribe compression stockings to improve blood flow to the infected area. Bedsores can be dealt with, by regularly changing the patient's position. Patients with diabetes need to regulate their blood glucose levels to ensure proper blood circulation to all parts of the body, including the legs and arms.

4. Corneal Ulcer

It is characterized by an open sore on the cornea, the transparent outer covering of the eye. It is otherwise known as ulcerative keratitis.

Causes

It is mainly a result of infections. Some of the major causes of corneal ulcer are as follows –

- Infection by bacteria such as *Staphylococcus aureus*, *Pseudomonas*, *Enterococci*, etc.
- Viral infections caused by Herpes virus
- Infection by *Aspergillus*, *Mucor*, *Rhizopus* and other fungi
- Physical injuries that cause scratches on the cornea
- Use of contact lenses for extended periods
- Dry eye syndrome

Prolonged use of contact lenses deprives the cornea of oxygen and makes it susceptible to infection.

Symptoms

A patient with corneal ulcer, exhibits symptoms such as swollen and painful eyes, reddening of the eyes, excessive secretion of tears, hazy or unclear vision and a white spot visible in the field of vision.

Treatment and Prevention

Treatment is mainly by administering antibiotics and other drugs to control the spread of infection. If the ulcer is caused by prolonged use of contact lenses, then the doctor may recommend that the patient to stop using them. It can be prevented by maintaining basic hygiene. This includes washing hands regularly before touching your eyes to prevent infection.

5. Genital Ulcer

Painful ulceration may also occur on the genitals, which may be transmitted either sexually or could happen due to an infection or underlying health condition.

Causes

Sexually transmitted diseases (including genital herpes, syphilis, and chancroid), acute systemic illnesses (including tonsillitis, upper respiratory infection, and diarrheal illness), Epstein-Barr virus, lupus, some forms of rheumatoid arthritis, Behçet disease, and Crohn's disease.

Symptoms

Painful and elevated sores, blisters, swelling.

Treatment

Depends upon the underline cause. However, it may include antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs), topical corticosteroid ointment, and more.

6. Leg Ulcer

Leg ulcers usually appear on the skin on the inside of the lower leg, right above the ankle.

Causes

Injury or trauma on the area, bacterial infection, impaired blood flow in the legs due to venous insufficiency (attributes almost 80% of leg ulcers).

Symptoms

Swollen ankles and veins of the leg, pain, dryness, itchiness, redness, discoloration (dark red or purple), irregular borders, thick skin.

Treatment

Depending upon the cause, the treatment would aim at taking care of the underlying trigger. As a majority of leg ulcers are caused due to venous insufficiency—where the leg veins fail to return the blood to the heart, thereby forming an ulcer—treatment may include exercises, compression therapy, antibiotics, and perhaps surgery.

7. Foot Ulcer

Depending upon the cause, foot ulcers tend to appear on the sole of the feet, heels, between the toes, tips of the toes, or on the nail bed. Neurotrophic (diabetic) ulcers and arterial (ischemic) ulcers commonly emerge on the feet.

Causes

Diabetes, arteriosclerosis, infections, certain medications, lymphedema, impairment of sensation due to poor blood circulation in the feet and legs.

Symptoms

Pain (especially during the night), swelling, redness, ulcer appears whitish-yellow when leg is kept at an elevation, discolored appearance (pinkish-red/brownish-black).

Treatment

The treatment would be based upon the underlying trigger. In case of diabetic neuropathy, the treatment would focus on relieving pain, managing blood sugar levels, and slowing the progression of ulcer formation. A combination of antibiotics, pain relievers, and other medications will be prescribed. In case of arterial diseases, the impairment would be corrected using compression techniques, exercises, medications, and possibly surgery.

B. Complications for Ulcer

Between 10-20% of peptic ulcer patients develop complications at some time during the course of their illness. All of these are potentially serious conditions. Complications are not always preceded by diagnosis of or treatment for ulcers; as many as 60% of patients with complications have not had prior symptoms.

Hemorrhage: Bleeding is the most common complication of ulcers. It may result in anemia, vomiting blood (hematemesis), or the passage of bright red blood through the rectum (melena). About half of all cases of bleeding from the upper digestive tract are caused by ulcers. The mortality rate from ulcer hemorrhage is 6-10%.

Perforation: About 5% of ulcer patients develop perforations, which are holes in the duodenal or gastric wall through which the stomach contents can leak out into the abdominal cavity. The incidence of perforation is rising because of the increased use of NSAIDs, particularly among the elderly. The signs of an ulcer perforation are severe pain, **fever**, and tenderness when the doctor touches the abdomen. Most cases of

perforation require emergency surgery. The mortality rate is about 5%.

Penetration: Ulcer penetration is a complication in which the ulcer erodes through the intestinal wall without digestive fluid leaking into the abdomen. Instead, the ulcer penetrates into an adjoining organ, such as the pancreas or liver. The signs of penetration are more severe pain *without* rhythmicity or periodicity, and the spread of the pain to the lower back.

Obstruction: Obstruction of the stomach outlet occurs in about 2% of ulcer patients. It is caused by swelling or scar tissue formation that narrows the opening between the stomach and the duodenum (the pylorus). Over 90% of patients with obstruction have recurrent vomiting of partly digested or undigested food; 20% are seriously dehydrated. These patients also usually feel full after eating only a little food, and may lose weight.

C. Test for Ulcer

Blood Tests: Blood tests usually give normal results in ulcer patients without complications. They are useful, however, in evaluating anemia from a bleeding ulcer or a high white cell count from perforation or penetration. Serum gastrin levels can be used to screen for Zollinger-Ellison syndrome.

Tests for Helicobacter Pylori: It is important to test for *H. pylori* because almost all ulcer patients who are not taking NSAIDs are infected. Noninvasive tests include blood tests for immune response and a breath test. In the breath test, the patient is given an oral dose of radiolabeled urea. If *H. pylori* is present, it will react with the urea and the patient will exhale radiolabeled carbon dioxide. Invasive tests for *H. pylori* include tissue biopsies and cultures performed from fluid obtained by endoscopy.

D. Treatment for Ulcer

Medication: Most drugs that are currently given to treat ulcers work either by lowering the rate of stomach acid secretion or by protecting the mucous tissues that line the digestive tract.

Antisecretory Drugs: Medications that lower the rate of stomach acid secretions fall into two major categories: proton pump inhibitors, which bind an enzyme that secretes stomach acid, and H₂ receptor antagonists, which work by reducing intracellular acid secretion. The

proton pump inhibitors include omeprazole (Prilosec) and lansoprazole (Prevacid). The H₂ receptor antagonists include ranitidine (Zantac), cimetidine (Tagamet), famotidine (Pepcid), and nizatidine (Axid). Both types of drugs have few serious side effects and appear to be safe for long-term use.

Protective Drugs: The drugs that are currently used to protect the stomach tissues are sucralfate (Carafate), which forms a pastelike substance that clings to the mucous tissues and prevents further damage from stomach acid; and bismuth preparations. A third type of protective drug includes misoprostol (Cytotec), which is often given to patients with ulcers caused by NSAIDs.

Surgery: Surgical treatment of ulcers is generally used only for complications and suspected malignancies. The most common surgical procedures that are used are vagotomies, in which the connections of the vagus nerve to the stomach are cut in order to reduce acid secretion; and antrectomies, which involve the removal of a part of the stomach (the antrum).

Eradication of Helicobacter: Most doctors presently recommend treatment to eliminate *H. pylori* in order to prevent ulcer recurrences. Without such treatment, ulcers recur at the rate of 80% per year. A 2003 report showed that eradication *H. pylori* alone usually prevents recurring bleeding ulcers. The usual regimen used to eliminate the bacterium is a combination of tetracycline, bismuth subsalicylate (Pepto-Bismol), and metronidazole (Metizol).

Alternative Treatment

Alternative treatments can relieve symptoms and promote healing of ulcers. A primary goal of these treatments is to rebalance the stomach's hydrochloric acid output and to enhance the mucosal lining of the stomach

E. Prevention for Ulcer

Seven foods to prevent Ulcer

1. Honey
2. Broccoli, Brussels Sprouts, Cauliflower, and Kale
3. Cabbage
4. Yogurt With Active Cultures
5. Plantain
6. Fruits, Vegetables, Whole Grains, and Other Foods High in Fibre
7. Slippery Elm Tea

III. RESULTS AND DISCUSSION

Diet for Ulcer

Type of Foods	Foods to Avoid	Foods Safe to Consume
Vegetables	Tomatoes, cabbage, sprouts, turnips, peppers, cucumber, broccoli, onions, cauliflower, rutabaga, sauerkraut	Green leafy vegetables, legumes, all fresh vegetables
Fruits	Citrus fruits, lemons, oranges, berries, nuts and seeds	All the rest of fruits
Dairy	Whole milk, butter, cream, cheese, margarine	Low fat milk, butter, soy, tofu
Meat / Poultry	Fried and seasoned meat, chicken and fish, corned beef, frankfurter sausages	Lean meat, fish, skinless poultry, eggs
Grains	Breads, pastries, cakes, biscuits, refined flour products	Whole wheat bread and pasta, rice cakes, waffles
Beverages	Coffee, tea, soda, fruit juice	Herbal tea, clear homemade soup
Others	Animal fat, vegetable oil, mayonnaise, ketchup, peanut butter, vinegar, mustard oil, chili sauce, pepper, garlic, chili powder, pickles	Olive oil, low-fat dressing, honey

IV. CONCLUSION

Every ulcer has the potential to hemorrhage. If the ulcer crater lies on an important artery, the potential danger of massive bleeding is higher. For these reason it is very important to consult a physician if you have three or more of the following five common ulcer symptoms abdominal pain, meal related pain, dyspepsia, trouble sleeping and bloody vomit.

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