Peptic Ulcer Disease

The term peptic ulcer refers to both gastric and duodenal ulcers.

*Helicobacter pylori* infection is associated with about 95% of duodenal ulcers and 80% of gastric ulcers.

**Epidemiology**[1]

Dyspepsia occurs in 40% of the population annually and leads to a primary care consultation in 5% and endoscopy in 1%.

Of those who undergo endoscopy:

- About 40% have functional or non-ulcer dyspepsia.
- 40% have gastro-oesophageal reflux disease (GORD).
- 13% have ulcer disease.
- 2% have gastric cancer.
- 1% have oesophageal cancer.

In the past, duodenal ulcer was 10 times as common in men as in women and gastric ulcer had a male preponderance of 3:2. Now the frequency is much less, largely because of *H. pylori* eradication and the sex incidence being more even.

Peptic ulcer disease prevalence is decreasing in the West, except in certain populations such as immigrants.[2] A UK population-based cohort study reported an overall incidence of uncomplicated peptic ulcer as being 0.75 cases per 1,000 person-years, declining from 1.1 to 0.52 cases per 1,000 person-years between 1997 and 2005. A reduction in *H. pylori*-related peptic ulcers, changing patterns in non-steroidal anti-inflammatory drug (NSAID) use and increasing proton pump inhibitor (PPI) use may have contributed to this.[3]

**Aetiology**[4, 5]

- *H. pylori*.
- NSAIDs.
- Pepsin.
- Smoking.
- Alcohol.
- Bile acids.
- Steroids.
- Stress.
- Changes in gastric mucin consistency (may be genetically determined).[6]

Defence mechanisms include mucus, bicarbonate, mucosal blood flow and prostaglandins.

**Presentation**[7]

**Symptoms**

Symptoms of peptic ulcer disease are sometimes very nonspecific and a diagnosis is unreliable on history alone:

- Epigastric pain, usually 1 to 3 hours postprandial - it may sometimes wake the patient in the night, and be relieved by food.
- Nausea.
- Oral flatulence, bloating, distension and intolerance of fatty food - the last is also associated with gallstones.
- Heartburn sometimes occurs although it is more typically associated with gastro-oesophageal reflux.
- A posterior ulcer may cause pain radiating to the back.
- Symptoms are relieved by antacids (very nonspecific).

In Taiwan, silent peptic ulcer disease is not uncommon but in Western countries this is unusual.[8] One study suggests that silent peptic ulcers are more commonly associated with bleeding and may be a manifestation of reduced visceral sensation.[9]

**Signs**[7]

In uncomplicated cases there is very little to find on examination:

- There is often epigastric tenderness.
- If gastric emptying is slow, there may be a succussion splash.
Differential diagnosis

- Abdominal aortic aneurysm.
- GORD.
- Gastric cancer.
- Gallstones.
- Chronic pancreatitis.
- Crohn's disease.
- Diverticular disease.
- Irritable bowel syndrome.
- Drug-induced dyspepsia.
- Hepatitis.
- Acute ulcers (occur at times of severe physiological stress - eg, severe burns/head injury).
- Zollinger-Ellison syndrome (if H. pylori is negative, or has been eradicated and ulceration is refractory/recurrent).
- Coronary heart disease.

Investigations[10]

- FBC may show evidence of iron-deficiency anaemia.
- Testing for H. pylori.[11] Test using a carbon-13 urea breath test or a stool antigen test, or laboratory-based serology where its performance has been locally validated. If re-testing is required, a carbon-13 urea breath test is the chosen test. There is currently insufficient evidence to recommend the stool antigen test as a test of eradication.[1] Office-based serological testing is not currently recommended because of its inadequate performance.
- Endoscopy:
  - National Institute for Health and Care Excellence (NICE) guidelines state that endoscopy is not required unless the patient is presenting for the first time above the age of 55, or there are warning signs (as below).[1]
  - Irrespective of age, endoscopy is required if there is:
    - Iron-deficiency anaemia.
    - Chronic blood loss.
    - Weight loss.
    - Progressive dysphagia.
    - Persistent vomiting.
    - An epigastric mass.

- In patients aged over 55 years, referral should also be considered if there is:
  - Previous gastric ulcer.
  - Previous gastric surgery.
  - Pernicious anaemia.
  - NSAID use.
  - Family history of gastric carcinoma.
Management

Modification of behaviour[12]

- If drugs are the cause then they should be stopped or replaced but this may not be possible. Being more meticulous about the instructions for taking alendronate or taking NSAIDs including aspirin after food may be required.
- Cessation of smoking should be advised if applicable. Smoking increases the risk of peptic ulcer and delays healing as well as opposing the action of H2-receptor antagonist. It has many effects on other parts of the gut including facilitating gastro-oesophageal reflux.

Healing ulcers - *H. pylori*-positive[13]

Treatment for *H. pylori*-associated ulcer disease is mainly directed at eradication of infection. See separate article *Helicobacter pylori*.

Healing ulcers - *H. pylori*-negative, NSAID-induced

The NSAID should be stopped. More than 90% of gastric or duodenal ulcers heal with eight weeks of standard-dose H2-receptor antagonists - eg, ranitidine 150 mg twice a day if the NSAID is discontinued.[14] However, PPI drugs are now the mainstay of treatment rather than H2-receptor antagonists.

A large randomised trial has not shown any difference in gastric ulcer healing between groups receiving esomeprazole 40 mg, esomeprazole 20 mg and ranitidine.[15] NICE recommends full-dose PPI for two months.[1]

PPIs are better than standard-dose H2-receptor antagonists and misoprostol for prevention of duodenal ulcers.[14] Patients with high cardiovascular risk should continue to receive prophylactic low-dose aspirin and full-dose naproxen is the preferred NSAID. Co-therapy with a PPI or misoprostol is recommended for these groups. If patients are unable to tolerate PPI treatment, a systematic review of randomised trials found that double-dose H2-receptor antagonists reduce risk of both gastric and duodenal ulcers.

*H. pylori*-negative NSAID-negative ulcer[16]

Ulceration of the gastric or duodenal mucosa in the absence of *H. pylori* infection and NSAID or aspirin usage is rare. A careful history of the use of NSAIDs and aspirin is very important in any patient presenting with gastroduodenal ulceration in the absence of *H. pylori* infection. The patient might be unaware that several drugs obtainable over the counter as well as some herbal medications contain NSAIDs or aspirin.

To exclude the rare conditions that may cause this, such as Zollinger-Ellison syndrome, samples should be taken from the ulcer and surrounding mucosa.

Bleeding ulcers[17]

Early endoscopic intervention with ablative or mechanical treatment to the bleeding vessels is the treatment of choice. For more information see separate article *Upper Gastrointestinal Bleeding (includes Rockall Score)*.

Management of recurrence and its prevention[1]

- For gastric ulcer with *H. pylori* infection, NICE recommends eradication therapy followed by proof of eradication and repeat endoscopy. This is a consensus statement. If eradication is successful but the ulcer unhealed then malignancy needs to be considered.
- Serology tests are applicable only for initial diagnosis, as they remain positive for a long while.
- If patients are to be given long-term NSAIDs, a review from Hong Kong suggested that stratification of risk should be used to decide the plan for prevention, and that any patient who has had a peptic ulcer bleed (PUB) or who is put on long-term NSAIDs should be checked for *H. pylori* infection.[18]
- For patients who have relapses, intermittent therapy and annual review are recommended.
Monitoring

Patients should be reviewed at the end of a course of treatment, especially *H. pylori* eradication, to confirm a satisfactory outcome.

Repeat endoscopy may be required for:
- Failure to eradicate symptoms in a duodenal ulcer.
- Failure to have eradicated *H. pylori*.
- Follow-up of a gastric ulcer - this requires repeat endoscopy to confirm healing at 6 to 8 weeks along with confirmation of eradication of *H. pylori*.
- NSAID-induced ulcers - these should be treated according to whether they are gastric or duodenal.

If a gastric ulcer persists, referral to secondary care is required. If it is healed but symptoms persist, a course of acid suppression for a limited duration may be in order but, if symptoms persist, referral is necessary.

Effectiveness of interventions[1]

The NICE guidelines give the following data on the effectiveness of interventions based on a number of sources:

- In duodenal ulcer, acid suppression for 4 to 8 weeks produces healing of the ulcer in 69%. This rises by an extra 5.4% with eradication therapy too. Number needed to treat (NNT) = 18.
- In duodenal ulcer, relapse at 3 to 12 months after treatment is 39% after short-term acid suppression alone but eradication increases this by 52% to 91%. NNT = 2.
- In gastric ulcer, supplementation of acid suppression with eradication therapy does not improve healing rates but it does reduce relapse so that 3 to 12 months later 45% are free of ulcers after just acid suppression but eradication raises this by 32% to 77%. NNT = 3.
- In patients taking NSAIDs, eradication did not improve the ulcer healing rate but it did halve the number of endoscopically proven ulcers six months later from 18% to 9%.

Complications[19]

- Haematemesis or melena are associated with erosion of a large blood vessel and significant haemorrhage. Urgent admission to hospital is required. In patients whose ulcers have bled, eradication of *H. pylori* is more effective than even long-term acid suppression without eradication.[20]
- Perforation of a peptic ulcer causes an acute abdomen with epigastric pain that may progress to generalised rigidity. In the presence of steroids the symptoms of perforation may be suppressed or absent.
- Scarring of the duodenum may lead to pyloric stenosis with vomiting and weight loss but this is rare these days with effective treatment. The classical feature is that the vomit shows food such as tomato skins that were eaten 12 to 24 hours ago.
- Adverse reactions to PPIs and H2-receptor antagonists are usually rare and mild but severe problems can arise. Rare but not serious problems may include taste disturbance, peripheral oedema, photosensitivity, fever, arthralgia, myalgia and sweating. Serious problems include liver dysfunction, hypersensitivity reactions (including urticaria, angio-oedema, bronchospasm, anaphylaxis), depression, interstitial nephritis, blood disorders (including leukopenia, leukocytosis, pancytopenia, thrombocytopenia) and skin reactions (including Stevens-Johnson syndrome, toxic epidermal necrolysis, bullous eruption).
- Misoprostol often causes diarrhoea and abdominal pain, especially at higher doses.

Prognosis[5]

Prognosis is excellent if the underlying cause such as *H. pylori* infection or drugs can be addressed.

Eradication of *H. pylori* decreases the ulcer recurrence rate from 60-90% to 10-20%. This is still higher than previously reported and this is thought to be due to an increase in NSAID-related ulcers. The mortality rate is 1 in 100,000, a figure which has decreased modestly in the last few decades.

Further reading & references

- Management of acute upper and lower gastrointestinal bleeding: Scottish Intercollegiate Guidelines Network - SIGN (September 2008)
10. Peptic ulcer disease; Surgical-tutor.org.uk
12. Dyspepsia - proven peptic ulcer; NICE CKS, December 2012 (UK access only)
13. Test and treat for Helicobacter pylori (HP) in Dyspepsia - Quick Reference Guide for Primary Care; Public Health England

Disclaimer: This article is for information only and should not be used for the diagnosis or treatment of medical conditions. Patient Platform Limited has used all reasonable care in compiling the information but makes no warranty as to its accuracy. Consult a doctor or other healthcare professional for diagnosis and treatment of medical conditions. For details see our conditions.

Author: Dr Roger Henderson
Peer Reviewer: Prof Cathy Jackson
Document ID: 3105 (v28)
Last Checked: 03/02/2015
Next Review: 02/02/2020

View this article online at: patient.info/doctor/peptic-ulcer-disease
Discuss Peptic Ulcer Disease and find more trusted resources at Patient.