Helicobacter Pylori and Stomach Pain

Infection with *Helicobacter pylori* (*H. pylori*) is the cause of most stomach and duodenal ulcers. *H. pylori* also causes some cases of non-ulcer dyspepsia. Infection with *H. pylori* can be confirmed by a test done on a sample of stools (faeces), by a breath test, by a blood test, or from a biopsy sample taken during a gastroscopy (endoscopy). A one-week course of two antibiotic medicines plus an acid-suppressing medicine will usually clear the *H. pylori* infection. This should prevent the return of a duodenal or stomach ulcer that had been caused by this infection.

What is Helicobacter pylori infection and whom does it affect?

*Helicobacter pylori* (commonly just called *H. pylori*) is a germ (bacterium). It can infect the lining of the stomach and duodenum (the first part of the intestine). Over half the world's population has it. It is more common in developing countries. Why and when people become infected is unknown. It is sometimes present in children and some scientists believe we acquire it at a very young age. About 15 in 100 people are infected in the UK and it is getting less common as time goes by. Once you are infected, unless treated, the infection usually stays for the rest of your life.

What problems does Helicobacter pylori cause?

**Commonly there are no problems**

Most people who are infected with *H. pylori* have no symptoms or problems caused by the infection. These people do not know that they are infected. A number of *H. pylori* germs (bacteria) may just live harmlessly in the lining of the stomach and duodenum.

**Stomach and duodenal ulcers**

*H. pylori* is the most common cause of duodenal and stomach ulcers. About 3 in 20 people who are infected with *H. pylori* develop an ulcer. An ulcer occurs where the lining of the stomach or duodenum is damaged by the acid made in the stomach and the underlying tissue is exposed. If you could see inside your gut, an ulcer looks like a small, red crater on the lining of the stomach or duodenum.

The exact way *H. pylori* causes ulcers in some infected people is not totally clear. Your stomach normally produces acid to help with the digestion of food and to kill bacteria. This acid is corrosive. Some cells on the inside lining of the stomach and duodenum produce a natural mucous barrier which protects the lining of the stomach and duodenum from this acid. There is normally a balance between the amount of acid that you make and the mucous defence barrier. An ulcer may develop if there is an alteration in this balance allowing the acid to damage the lining of the stomach or duodenum. In some people *H. pylori* causes inflammation in the lining of the stomach or duodenum. This is called gastritis and may lead to other conditions such as vitamin B12 deficiency. In gastritis the mucous defence barrier to be disrupted in some way (and in some cases the amount of acid to be increased). This seems to allow the acid to cause inflammation and ulcers.

**Non-ulcer dyspepsia**

This is a condition where you have recurrent bouts of indigestion (dyspepsia) which are not caused by an ulcer or inflammation. It is sometimes called functional dyspepsia. *H. pylori* is sometimes found in people with non-ulcer dyspepsia. Getting rid of *H. pylori* cures some cases but makes no difference in most cases. The cause of most cases of non-ulcer dyspepsia is not known.
Stomach cancer

The risk of developing stomach cancer is thought to be increased with long-term infection with \textit{H. pylori}. However, it has to be stressed that the vast majority of people with \textit{H. pylori} do not get stomach cancer. The increased risk is small. Your risk may be greater if you have \textit{H. pylori} in addition to having a first-degree relative (mother, father, brother, sister or child) who has been diagnosed with stomach cancer.

Gastric mucosa-associated lymphoid tissue lymphoma - a MALToma

This is a rare and unusual type of stomach cancer. Infection with \textit{H. pylori} is thought play a role in this condition developing.

How is \textit{Helicobacter pylori} diagnosed?

Various tests can detect \textit{H. pylori}:

- A breath test can confirm that you have a current \textit{H. pylori} infection. A sample of your breath is analysed after you take a special drink. \textbf{Note}: prior to this test you should not have taken any antibiotics for at least four weeks. Also, you should not have taken a proton pump inhibitor (PPI) or H$_2$-receptor antagonist medicine for at least two weeks. (These are acid-suppressing medicines.) Also, you should not eat anything for six hours before the test. The reason for these rules is because the medication and food can affect the test result.
- An alternative test is the stool antigen test. In this test you give a pea-sized sample of your stools (faeces) which is tested for \textit{H. pylori}. \textbf{Note}: prior to this test you should not have taken any antibiotics for at least four weeks. Also, you should not have taken a PPI or H$_2$-receptor antagonist acid-suppressing medicine for at least two weeks.
- A blood test can detect antibodies to \textit{H. pylori}. This is sometimes used to confirm that you are, or have been, infected with \textit{H. pylori}. However, it can take up to a year for this test to become negative once the infection has cleared. So, it is no use to confirm whether treatment has cleared the infection (if this needs to be known). If needed, the breath test or stool antigen test is usually used to check if an infection has cleared following treatment.
- Sometimes a small sample (biopsy) of the lining of the stomach is taken if you have a gastroscopy (endoscopy). The sample can be tested for \textit{H. pylori}.

How is \textit{Helicobacter pylori} cleared from the stomach and duodenum?

\textit{H. pylori} is killed by certain antibiotics. However, a combination of medicines is needed to get rid of it completely. This is referred to as combination therapy although because it eradicates (gets rid of) the germ it is also referred to as eradication therapy. You need to take two antibiotics at the same time. In addition, you need to take a medicine to reduce the acid in the stomach. This allows the antibiotics to work well in the stomach. You need to take eradication therapy for a week. It is important to take all the medication exactly as directed and to take the full course.

Eradication therapy clears \textit{H. pylori} in up to 9 in 10 cases if it is taken correctly for the full course. If you do not take the full course then the chance of clearing the infection is reduced. A second course of eradication therapy, using different antibiotics, will usually work if the first course does not clear the infection.

Eradication therapy is sometimes called triple therapy as it involves three medicines - two antibiotics and an acid-suppressing medicine.
Who should be tested for Helicobacter pylori and treated if it is found?

If you have repeated indigestion symptoms (recurring dyspepsia)
If you have recurring dyspepsia (dyspepsia which clears up and then comes back again), it is common practice to test for *H. pylori* before doing any other tests. If *H. pylori* is found, eradication treatment is often given. The exact diagnosis may not be known. For example, it might not be clear if the dyspepsia is caused by a duodenal or stomach ulcer, or non-ulcer dyspepsia. These can only be confirmed by having a look down into the gut with a test called gastroscopy (endoscopy). However, if symptoms go after treatment for *H. pylori* then that is the end of the matter. You do not need further tests such as gastroscopy. You will not know exactly what caused the symptoms but this does not matter if the symptoms have gone.

Other reasons for testing
If you are in one of the following groups, you may be offered a test for *H. pylori* and offered treatment with eradication therapy if it is found. If you:

- Have a duodenal or stomach ulcer. Eradication therapy will usually cure the ulcer.
- Have non-ulcer dyspepsia. Eradication therapy may work and clear symptoms but it does not in most cases.
- Have a first-degree relative (mother, father, brother, sister or child) who has been diagnosed with stomach cancer. Treatment is advised even if you do not have any symptoms. The aim is to reduce your future risk of stomach cancer.
- Are taking, or are about to take, long-term anti-inflammatory medication such as ibuprofen, diclofenac, aspirin, etc. The combination of these medicines and *H. pylori* increases the risk of developing a stomach ulcer.
- Have a MALToma.
- Have atrophic gastritis (inflammation of the stomach lining).
- Have had an operation to remove a stomach cancer.
- Have an unexplained iron-deficiency anaemia.
- Have a condition called chronic idiopathic thrombocytopenic purpura. This is an uncommon blood condition where the number of platelets in the blood becomes very low. Some research suggests a possible connection between *H. pylori* infection and this condition.

Follow-up
If you have indigestion (dyspepsia), it is usually only necessary to check to see if the *H. pylori* has gone if your symptoms come back after treatment. If you have a gastric or duodenal ulcer, testing is usually done 6-8 weeks after treatment.

Are there any side-effects of eradication therapy?
Up to 3 in 10 people develop some side-effects when they take eradication therapy. These include indigestion (dyspepsia), feeling sick (nausea), diarrhoea and headaches. However, it is worth persevering with the full course if side-effects are not too bad. A switch to a different set of medicines may be advised if the first combination does not clear the *H. pylori*, or if it caused bad side-effects and you had to stop taking it.

Further reading & references

- *Dyspepsia and gastrooesophageal reflux disease: Investigation and management of dyspepsia - symptoms suggestive of gastrooesophageal reflux disease - or both;* NICE Clinical Guideline (Sept 2014)
- *Dyspepsia - proven non-ulcer;* NICE CKS, December 2012 (UK access only)
- *Dyspepsia - proven peptic ulcer;* NICE CKS, December 2012 (UK access only)

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