

## Helicobacter Pylori (the ulcer bacteria)



This unusual name identifies a specific bacteria that can cause infection of the stomach. This infection can contribute to the development of diseases, such as dyspepsia (heartburn, bloating and nausea), gastritis (inflammation of the stomach), and ulcers in the stomach and duodenum. It will be useful to know some things about the upper digestive tract to understand how and where *Helicobacter pylori* infection can occur. When food is swallowed, it passes through the esophagus (the tube that connects the throat to the stomach). It then enters the larger upper part of the stomach. A strong acid that helps to break down the food is secreted in the stomach. The narrower, lower part of the stomach is called the antrum. The antrum contracts frequently and vigorously, grinding up the food and squirting it into the small intestine. The duodenum is the first part of the small intestine, just beyond the stomach. The stomach, including the antrum, is covered by a layer of mucous that protects it from the strong stomach acid. It is known that alcohol, aspirin, and arthritis drugs such as ibuprofen can disrupt the protective mucous layer. This allows the strong stomach acid to injure underlying stomach cells. In some people, corticosteroids, smoking, and stress appear to contribute in some way. Until the mid 1980s, it was felt that one or more of these factors working together led to the development of gastritis and ulcers. Since that time, evidence has been mounting that *Helicobacter pylori* (*H. pylori*) has a major role in causing these diseases.

### The Infection

*H. pylori* is a fragile bacteria that has found an ideal home in the protective mucous layer of the stomach. These bacteria have long threads protruding from them that attach to the underlying stomach cells. The mucous layer that protects the stomach cells from acid also protects *H. pylori*. These bacteria do not actually invade the stomach cells as

certain other bacteria can. The infection, however, is very real and it does cause the body to react. Infection-fighting white blood cells move into the area, and the body even develops H. pylori antibodies in the blood.

H. pylori infection probably occurs when an individual swallows the bacteria in food, fluid, or perhaps from contaminated utensils. The infection is likely one of the most common worldwide. The rate of infection increases with age, so it occurs more often in older people. It also occurs frequently in young people in the developing countries of the world, since the infection tends to be more common where sanitation is poor or living quarters are cramped. In many cases it does not produce symptoms. In other words, the infection can occur without the person knowing it. The infection remains localized to the gastric area, and probably persists unless specific treatment is given.

### **How is H. pylori Infection Diagnosed?**

There are currently three ways to diagnose H. pylori infection. During endoscopy (a visual exam of the stomach through a thin, lighted, flexible tube), the physician can remove small bits of tissue through the tube. The tissue is then tested for the bacteria. A breath test is now available. In this test, a substance called urea is given by mouth. A strong enzyme in the bacteria breaks down the urea into carbon dioxide, which is then exhaled and can be measured. And finally, there is a blood test that measures the protein antibodies against these bacteria that are present in the blood. This antibody can mean the infection is present, or that it was present in the past and is now cleared. In other words, a person can have a positive blood test but no infection.

### **Gastritis and Dyspepsia**

The symptoms are discomfort, bloating, nausea and perhaps vomiting. The person may also have symptoms that suggest ulcers -- burning or pain in the upper abdomen, usually occurring about an hour or so after meals or even during the night. The symptoms are often relieved temporarily by antacids, milk, or medications that reduce stomach acidity. Yet, the physician does not find an ulcer when the patient is tested by x-ray or endoscopy. When H. pylori is found in the stomach, it is tempting to believe that it is the cause of the symptoms, although this connection is not yet clear cut. The physician will usually prescribe antibiotic therapy to see if clearing the infection relieves symptoms.

### **Ulcers**

**Stomach Ulcers:** With stomach ulcers, H. pylori infection is found in 60 to 80 percent of the cases. Again, it is still uncertain how the infection acts to cause the ulcer. It probably weakens the protective mucous layer of the stomach. This allows acid to seep in and injure the underlying stomach cells. However, there is still a great deal of research to be done to unravel this relationship.

**Duodenal ulcers:** In times past, physicians were taught "no acid, no ulcer." The medical profession felt the single most important factor causing duodenal ulcers to form was strong stomach acid. Research has now shown that over 90% of all patients who develop duodenal ulcers have H. pylori infection in the stomach as well. Medical studies are under way to determine the relationship between the

two and how an infection in the stomach can be related to a duodenal ulcer. Acid is still important; patients without acid in the stomach never get duodenal ulcers. However, physicians now accept the fact that the infection is directly related to the development of duodenal ulcers. It is now rather easy to clear duodenal ulcers with the strong acid-reducing medicines available. But, the ulcers will usually recur unless the *H. pylori* infection is also cleared from the stomach.

### **Stomach Cancer and Lymphoma**

These two types of cancer are now known to be related to *H. pylori* bacteria. This does not mean that all people with *H. pylori* infection will develop cancer; in fact, very few do. However, it is likely that if the infection is present for a long time, perhaps from childhood, these cancers may then develop. This is another reason why it is important to treat *H. pylori* infection.

### **When is Treatment Necessary?**

Since the infection is so common, it is sometimes recommended that no treatment be given when there are no symptoms. However, these recommendations may change as more research develops. Increasingly, physicians are treating the acute ulcer with acid-reducing medicines and treating the infection with antibiotics. Interestingly, one of these antibiotics is a bismuth compound that is available over-the-counter as Pepto-Bismol. It is also available as a generic drug called bismuth subsalicylate. The bismuth part of the medicine actually kills the bacteria. However, do not go to the drugstore and purchase a bottle of Pepto-Bismol, expecting this alone to cure the infection. *H. pylori* is buried deep in the stomach mucous, so it is difficult to get rid of this infection. Several antibiotic drugs are always used together to prevent the bacteria from developing resistance to any one of them. Current medical studies are being done to develop easier treatment programs for this difficult infection.

### **Summary**

*H. pylori* is a very common infection of the stomach. It may be the most common infection in the world. It is now clear that the infection is directly related to the development of stomach and duodenal ulcers, and it is likely that it may be related to cancers involving the stomach. There are several diagnostic tests available, and effective treatment can prevent the recurrence of ulcers and perhaps the development of cancer.