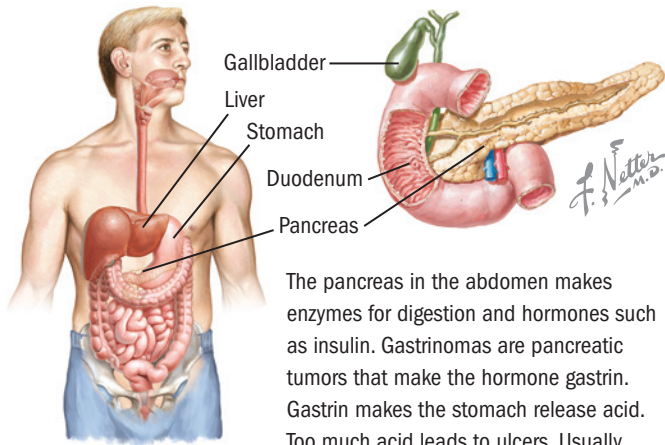
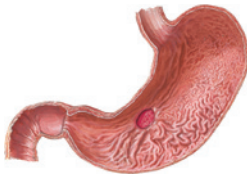


MANAGING YOUR GASTRINOMA (ZOLLINGER-ELLISON SYNDROME)



The pancreas in the abdomen makes enzymes for digestion and hormones such as insulin. Gastrinomas are pancreatic tumors that make the hormone gastrin. Gastrin makes the stomach release acid. Too much acid leads to ulcers. Usually, gastrinomas develop in the pancreas and the part of the small intestine called the duodenum.



Stomach with peptic ulcer disease



Excess acid



Pancreas with gastrinomas

People with the rare Zollinger-Ellison syndrome have three conditions: too much stomach acid, peptic ulcer disease, and gastrinomas. The syndrome usually occurs between the ages of 30 and 60.



The cause is unknown, but it may be genetic, because many gastrinomas occur in people with an inherited disease called multiple endocrine neoplasia type I.

Abdominal pain, usually in the upper middle part, occurs with an empty stomach. Nausea and vomiting can occur. Diarrhea is also common.



What Are Gastrinomas?

The pancreas is an organ in the abdomen (belly) next to the liver and stomach. As part of the digestive system, it makes substances (pancreatic enzymes) that help with digestion. As part of the endocrine system, pancreatic cells also make substances called hormones (such as insulin).

Gastrinomas are small tumors in the pancreas that make the hormone gastrin. This hormone causes the stomach to release acid. Too much acid because of high levels of gastrin leads to ulcers. Gastrinomas can cause Zollinger-Ellison syndrome.

People with the rare Zollinger-Ellison syndrome have three conditions: too much acid in the stomach, peptic ulcer disease, and gastrinomas. Usually, people have more than one gastrinoma, typically in the pancreas but they can also be found in the first part of the small intestine (duodenum). The syndrome usually occurs between the ages of 30 and 60.

What Causes Gastrinomas?

The cause is unknown, but it may be genetic, because many gastrinomas occur in people with an inherited disease called multiple endocrine neoplasia type I (MEN I).

What Are the Symptoms of Gastrinomas?

Abdominal pain, usually in the upper middle part, occurs with an empty stomach. This pain is like pain in peptic ulcer disease, but it's more severe and is more resistant to the usual doses of medications used for peptic ulcers. Nausea and vomiting can occur. Diarrhea is also common.

How Are Gastrinomas Diagnosed?

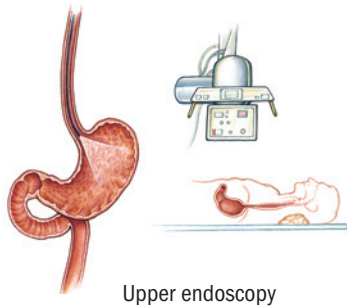
The doctor makes a diagnosis from symptoms, blood test measuring gastrin, and tests that stimulate gastrin release. Measuring the amount of stomach acid made per hour also helps diagnosis.

The doctor does upper endoscopy to look for stomach ulcers. Endoscopy involves putting a tube with a lighted tip into the stomach. Other tests used to find the gastrinoma are computed tomography (CT), magnetic resonance imaging (MRI), angiography, and ultrasonography. Gastrinomas are often cancerous and tend to spread to nearby lymph nodes (glands) and liver.



Your doctor makes a diagnosis from symptoms, blood test measuring gastrin, and tests that stimulate gastrin release. Measuring the amount of stomach acid made per hour also helps diagnosis.

Your doctor also does upper endoscopy to look for stomach ulcers. To find gastrinomas, your doctor may use CT, MRI, angiography, or ultrasonography.



Upper endoscopy



Medicines can reduce acid production, heal ulcers, and prevent ulcers from returning. Only surgery and complete removal of a gastrinoma can cure it, but only 30% of cases are cured because the tumors are very small and hard to find.

Don't miss follow-up appointments after surgery. Blood tests and acid-stimulating tests help rule out a return of gastrinomas.



Call your doctor if you have abdominal pain or diarrhea. Also call your doctor if you have pain, drainage, or fever after surgery.

How Are Gastrinomas Treated?

Treatment goals are to control excess acid secretion and remove the gastrinoma. Medicines can reduce acid production, heal ulcers, and prevent ulcers from returning. They don't cure the gastrinoma. Only surgery and complete removal of the gastrinoma can cure it. Unfortunately, only 30% of cases are cured because the tumors are so small and hard to find.

DOs and DON'Ts in Managing Gastrinomas:

- ✓ **DO** get advice from centers with experience in this syndrome.
- ✓ **DO** get the advice of a gastroenterologist (specialist in GI disorders) and surgeon.
- ✓ **DO** call your doctor if you have abdominal pain or diarrhea.
- ✓ **DO** call your doctor if you have pain, drainage, or fever after surgery.
- ⊗ **DON'T** ignore abdominal pain, especially if it doesn't respond to usual treatment.
- ⊗ **DON'T** forget to tell your doctor about family history related to this disease.
- ⊗ **DON'T** miss follow-up appointments after surgery. Blood tests and acid-stimulating tests help rule out return of gastrinomas.

FOR MORE INFORMATION

Contact the following sources:

- National Digestive Diseases Information Clearinghouse
Tel: (800) 891-5389
Website: <http://digestive.niddk.nih.gov>
- American Gastroenterological Association
Tel: (301) 654-2055
Website: <http://www.gastro.org>
- American College of Gastroenterology
Tel: (703) 820-7400
Website: <http://www.acg.gi.org>
- American College of Surgeons
Tel: (312) 202-5000, (800) 621-4111
Website: <http://www.facs.org>

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