

## ABDOMINAL PAIN

By Lawrence R. Schiller, M.D.  
Baylor University Medical Center  
Dallas, Texas

### **What is abdominal pain?**

Ordinarily, we are unaware of any of the actions of the organs in the abdomen or any discomfort from activities such as eating, movement of food through the intestines, or bowel movements. Nerves are constantly monitoring activities in the body, and when those messages are transmitted to the brain and come into consciousness as unpleasant sensations, we may sense pain or discomfort.

### **What causes abdominal pain?**

Pain can arise from any of the structures within the abdomen or the abdominal wall. In addition, pain messages originating in the chest, back, or pelvis can sometimes be perceived as coming from the abdomen. For example, patients with heart attacks or pneumonia sometimes complain of upper abdominal pain rather than chest pain. There are many possible causes of pain. The table shows some of the more common causes of pain:

#### *Non-abdominal causes:*

- Pneumonia (lung infection)
- Myocardial infarction (heart attack)
- Pleurisy (irritation of the lining around the lungs)
- Pulmonary embolism (blood clots to the lungs)

#### *Abdominal or chest wall pain:*

- Shingles (herpes zoster infection)
- Costochondritis (inflammation of the rib cartilages)
- Injury (blunt trauma, muscle pulls)
- Nerve irritation (neuropathy)
- Hernias (protrusions of structures through the abdominal wall)
- Scars



*Inflammatory conditions of the upper abdomen:*

- Ulcer disease (duodenal ulcer, gastric ulcer)
- Esophagitis (gastroesophageal reflux disease)
- Gastritis (irritation of the lining of the stomach)
- Pancreatitis (inflammation of the pancreas)
- Cholecystitis (inflammation of the gall bladder)
- Cholelithiasis (passage of gall stones through the bile duct)
- Hepatitis (infection or inflammation of the liver)
- Colitis (infection or inflammation of the colon)

*Functional problems of the abdomen:*

- Non-ulcer dyspepsia (discomfort after eating not due to ulcers)
- Sphincter of Oddi dysfunction (problems with the bile duct valve)
- Functional abdominal pain (pain without clear cause)
- Irritable bowel syndrome (pain associated with bowel movements)

*Cancers of the upper abdomen:*

- Hepatoma (liver cancer)
- Cholangiocarcinoma (bile duct or gall bladder cancer)
- Pancreatic cancer
- Stomach cancer
- Lymphoma (cancer of the immune cells)

*Vascular problems:*

- Mesenteric vascular insufficiency (blocked arteries or veins)
- Abdominal aortic aneurysm (swelling of the main artery in the belly)

*Inflammatory conditions in the mid-and lower abdomen:*

- Enteritis (infections of the small bowel, Crohn's disease)
- Colitis (infection or inflammation of the colon)
- Diverticulitis (inflammation of pouches that form in the colon)
- Appendicitis



*Bowel obstruction:*

- Adhesions (scars in the belly that form after surgery or inflammation)
- Tumor
- Inflammation
- Colon Cancer

*Urinary tract problems:*

- Kidney stones
- Urinary tract infections (kidneys, bladder)
- Tumors of the kidneys or bladder

*Pelvic problems in women:*

- Ovarian cysts or cancer
- Infection of the tubes (salpingitis)
- Ectopic pregnancy
- Fibroid tumors of the uterus (womb)
- Malignant tumors of the uterus or cervix
- Endometriosis
- Adhesions (scars)

**When should a person be concerned about abdominal pain?**

Pain is always abnormal, but it may not be a medical emergency. Mild pain or chronic pain that is not associated with danger signs ("red flags") should be discussed with your doctor when it is convenient. Severe pain or pain that is associated with red flags should be discussed with your doctor; he or she may want you to visit the office or even the emergency room, depending upon your specific complaints. Red flags that should prompt discussion with your doctor include fever, diarrhea, persistent constipation, blood in the stools, persistent nausea or vomiting, vomiting blood, severe tenderness of the belly, jaundice (yellowish discoloration of the skin) or swelling of the abdomen.

**How is the cause of abdominal pain determined?**

The patient's history is the most helpful information that a doctor uses to determine the cause of abdominal pain. The characteristics of the pain (sharp, dull, cramping, burning, twisting, tearing, penetrating), its location and relation to eating or to having a bowel movement are important clues. Additional factors that are useful include the pattern of pain, its duration, radiation (spread) to other areas of the body, and its association with other symptoms, such as jaundice (yellow skin), nausea, vomiting, bleeding, diarrhea or constipation.



Findings on physical examination also are helpful. Key findings include areas of tenderness, the presence or absence of bowel sounds or abdominal distention, masses, organ enlargement, and evidence of blood in the stools.

Based on the history and physical examination the doctor may or may not have a clear idea about the cause of pain. Sometimes a diagnosis is made and treatment can be started. In other circumstances diagnostic tests are used to confirm or to exclude a specific diagnosis. Many tests can be ordered for these purposes. Frequently used tests include analysis of blood, urine and stool samples, x-rays of the abdomen, and endoscopy.

Blood tests include complete blood counts (analysis of the numbers of white cells that fight infections, red cells that carry oxygen and that are reduced in anemia, and platelets that help the blood to clot), chemistry tests (liver and kidney tests, blood mineral levels, and enzymes released when organs like the liver or pancreas are injured), and serology tests that measure antibody levels to various infections. Urine tests include urinalysis (measurement of characteristics and chemicals in urine along with microscopic inspection of a drop of urine), and urine culture for bacterial infection. Stools can be analyzed for blood and pus (markers of inflammation, infections, or tumors), fat (evidence of impaired digestion and absorption of food), and the presence of germs.

Many different kinds of x-ray and imaging tests are used to make pictures of the interior of the body. These include barium studies in which barium sulfate (a material that shows up on x-rays) is swallowed (barium swallow, upper gastrointestinal series, small bowel follow-through examination) or injected by a tube into the small intestine (enteroclysis) or colon (barium enema). Computerized tomography (CT scan) is a very sophisticated technique for reconstructing cross-sectional x-ray images of the body with the help of a computer. Magnetic resonance imaging is a similar technique in which radio waves and magnets are used to make pictures of the internal organs. Sonography uses high frequency sound waves to peer into the body and to visualize the internal structures. Nuclear medicine scans use isotopes to identify body parts and to examine their function.

Endoscopy involves the use of special instruments to look into the hollow organs of the digestive tract. Upper gastrointestinal endoscopy uses a flexible tube with a television camera in its tip and a lighting system to examine the esophagus, stomach, and duodenum (the part of the intestine just beyond the stomach). Special tools can be passed through the tube to remove polyps or to obtain biopsy specimens to be viewed under a microscope. Longer tubes can reach well into the small intestine and similar tubes can be introduced through the rectum to view the colon (colonoscopy). Special endoscopes have been designed to look at the bile ducts and pancreatic duct and to obtain sonograms from inside the gut ERCP (Endoscopic Retrograde Cholangiopancreatography) and EUS (Endoscopic Ultrasound), respectively). Another diagnostic test is capsule endoscopy in which a capsule containing a tiny camera, broadcasting station and antenna sends pictures to a special belt that is worn around the abdomen. Pictures can be obtained from throughout the small intestine as the device is propelled through the gut.



While the technology behind these tests is impressive, a cause for abdominal pain can be made in most patients by means of a history, physical examination, and a few simple tests. Every patient does not require a full panel of diagnostic tests.

### **What treatments are available for abdominal pain?**

Once a diagnosis is made, treatment can proceed for that condition. Sometimes medications are used to reduce inflammation or affect the function of an organ, thereby relieving pain. For example, ulcers can be treated by taking medications that reduce stomach acid secretion. As the ulcer heals, pain is reduced. Sometimes an operation is needed to correct a problem. For example, pain due to cholecystitis (inflammation of the gall bladder) is usually treated by removal of the gall bladder (cholecystectomy).

Occasionally, pain must be treated with drugs that reduce pain (analgesics). Simple analgesics like aspirin and ibuprofen should not be used ordinarily for undiagnosed abdominal pain because they may cause other problems, such as ulcers. Narcotic drugs are sometimes prescribed by doctors for abdominal pain, but their use can lead to constipation and other abdominal symptoms. Another approach is to use pain-modifying drugs to change the way that pain signals are processed in the spinal cord and brain. The drugs used most commonly for this purpose are antidepressant drugs, like amitriptyline or trazodone, that can be taken in very low doses that minimize side effects and have little or no antidepressant effects. In some cases pain management physicians use nerve blocks to identify and treat the mechanism of pain.

### **What is the outlook for patients with abdominal pain?**

Most patients with abdominal pain can be diagnosed and treated successfully. See your physician and appropriate specialists if you have persistent or severe abdominal pain.

