Holecystitis is a common condition that results from inflammatory, infectious, metabolic, neoplastic, and congenital disorders. The greatest incidence of acute holecystitis occurs in adults 30 to 80 years of age. There is a 2 times greater incidence of gallstones in women than in men. Cholecystitis is characterized by a recurring mild-to-moderate, right upper quadrant and epigastric abdominal pain. Pain often radiates to the right posterior scapula and back. Nausea, vomiting, low-grade fever, and leukocytosis are often present. Symptoms are commonly associated with consumption of high-fat meals 1 or more hours prior to the onset of pain.1-4

Murphy’s sign may be a useful tool in establishing the diagnosis of holecystitis. Confirmation of the diagnosis depends on a combination of physical findings and laboratory and imaging studies. A corollary, the sonographic Murphy’s sign, may be useful as well.1-5

**HISTORIC PERSPECTIVE**

John B. Murphy (1857–1916) was a prominent Chicago surgeon from the 1880s through the early 1900s. He was well known for his thoracoplasty procedures,6,7 and also made valuable contributions to vascular, urologic, neurologic, and orthopaedic surgery.8 In 1903, Murphy described a hypersensitivity elicited by deep palpation in the subcostal area when a patient with presumed gallbladder disease takes a deep breath. This hypersensitivity was later termed Murphy’s sign, and is 1 of at least 5 physical signs attributed to him.9

**ELICITATION**

While the examiner palpates the right subcostal region (Figure 1), the patient is instructed to take a deep breath, causing the gallbladder to descend toward the examiner’s hand. When this maneuver elicits a painful response from the patient, it is considered a positive Murphy’s sign.1-4

Patients with holecystitis often experience distress with this maneuver and may have a sudden cessation of inspiration when the inflamed gallbladder reaches the examining fingers. This is termed inspiratory arrest and has been described as a “shutting off” of the inspiration.9

The sonographic Murphy’s sign is similar to the Murphy’s sign elicited during an abdominal examination. In the sonographic Murphy’s sign, however, a positive response is produced by palpation with an ultrasound transducer. This maneuver is considered more accurate than palpation with the hand because the ultrasound transducer can confirm that the gallbladder is being pushed when the patient experiences inspiratory arrest.5,10 However, no studies have directly compared the accuracy of the classic versus the sonographic Murphy’s sign.

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**SIGNS OF HOLECYSTITIS**

**MURPHY’S SIGN**

**Elicitation:** Palpate the right subcostal area while the patient inspires deeply

**Positive response:** The patient feels pain upon this maneuver and may have an associated inspiratory arrest

**SONOGRAPHIC MURPHY’S SIGN**

**Elicitation:** Palpate the right subcostal area using an ultrasound transducer while the patient inspires deeply

**Positive response:** The patient feels pain upon this maneuver, and the ultrasound transducer can confirm that the gallbladder is being pushed when the patient experiences inspiratory arrest.
PATHOPHYSIOLOGY

In cholecystitis, the gallbladder becomes inflamed secondary to blockage of the cystic duct, usually by a gallstone.1,3,4 Subsequently, this inflammation causes the release of prostaglandins, which cause more inflammation of the gallbladder.1 Patients with acute cholecystitis experience discomfort with the Murphy's sign maneuver because the inflamed gallbladder descends toward the examiner's fingers, which irritates the peritoneum, thereby causing pain.9 Abdominal examination often elicits voluntary and involuntary guarding in these patients.

CLINICAL UTILITY OF MURPHY'S SIGN

The diagnosis of cholecystitis is achieved through a combination of history, physical examination, and laboratory and radiologic studies. Characteristic findings include pain on deep inspiration, abdominal distention and hypoactive bowel sounds, and leukocytosis with or without elevations in serum bilirubin and aminotransferase levels. Radiologic studies that may be of use include plain radiographs, oral cholecystogram, ultrasound, and radioisotope scanning.3,4,11

Elicitation of Murphy's sign is a useful diagnostic tool when cholecystitis is suspected. Clinicians cannot depend solely on Murphy's sign or sonographic Murphy's sign for diagnosis, but must also consider laboratory and imaging studies. Each patient's case should be evaluated individually to determine the appropriate diagnosis and treatment plan.

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REFERENCES


Figure 1. Elicitation of the Murphy's sign of cholecystitis.