



**FIGURE 95-4** **A**, Sites of the most severe pain during an episode of biliary pain in 107 patients with gallstones (% values add up to >100% because of multiple responses). The subphoid and right subcostal areas were the most common sites; note that the left subcostal region was not an unusual site of pain. **B**, Sites of pain radiation (%) during an episode of biliary pain in the same group of patients. (Modified from Burnicardi FC, Andersen DK, Billiar TR, et al: *Schwartz's principles of surgery*, ed 9, New York, 2009, McGraw-Hill.)

For a deeper discussion of these topics, please see Chapter 155, "Diseases of the Gallbladder and Bile Ducts," in *Goldman-Cecil Medicine, 25th Edition*.

## Diagnosis

Ultrasonography is 95% sensitive and specific for the diagnosis. In cholecystitis, ultrasound shows a thickened gallbladder wall and pericholecystic fluid. In cholangitis, ultrasound shows a dilated common duct, but obstructing gallstones are difficult to identify. Endoscopic retrograde cholangiopancreatography (ERCP) is required for a definitive diagnosis of cholangitis. The differential diagnosis includes peptic ulcer disease with or without perforation, pancreatitis, appendicitis, hepatitis, myocardial infarction, and pneumonia.

## Treatment

Biliary colic is usually self-limited. Acute cholecystitis usually requires intervention to relieve obstruction of the cystic duct, but it may remit spontaneously. Laparoscopic cholecystectomy is indicated emergently if there is gangrene or perforation; otherwise, surgery should be done within 1 to 3 days. Antibiotics are routinely given to cover bowel flora. Ceftriaxone can be given for mild to moderate disease, whereas broader coverage such as imipenem-cilastatin or piperacillin-tazobactam should be given for more severe disease (see [Tables 95-1, 95-2, and 95-3](#)).

Acute cholangitis should be treated initially with fluid resuscitation and antibiotics. ERCP is indicated for diagnosis and relief of obstruction. Emergency decompression of the biliary tract by ERCP or surgery may be indicated for severely ill patients.

## INFECTIONS OF SOLID ORGANS

### Hepatic Abscess

Liver abscess is usually caused by bacteria or *Entamoeba histolytica*. Both are rare. The incidence of bacterial abscess is 10 to 20 cases per million people per year, and the incidence of amebic abscess is 1 case per million per year in the United States. Worldwide, however, 10% of people are infected with gastrointestinal *E. histolytica*, and liver abscess is the most common extraintestinal manifestation.

The biliary tract is the most common source of infection for bacterial hepatic abscess. Other sources include direct extension (e.g., perforated appendicitis), portal vein (e.g., abdominal infection), hepatic artery (e.g., bacterial line infection), and trauma. In 20% to 40% of cases, no cause is found. The bacteriology of hepatic abscess reflects the source, with polymicrobial bowel flora being the most common. Hematogenous sources are usually staphylococcal or streptococcal species. Less common organisms include *Klebsiella pneumoniae*, which is identified particularly in case series from Asia, and *Candida* species found in immunocompromised patients.

Liver abscess usually manifests with fever for days to weeks. Right upper quadrant abdominal pain and tenderness are found in one half of patients and jaundice in one fourth. Peripheral blood leukocyte counts are elevated in three fourths, and two thirds have an obstructive liver profile with an elevated alkaline phosphatase level. [Table 95-5](#) illustrates the differences between amebic and bacterial liver abscesses.

Patients with amebic liver abscess tend to be younger men with more right upper quadrant pain and a more acute course than those with bacterial hepatic abscess. There often is a history of travel or residence in a highly endemic geographic area.

Ultrasound is the preferred initial diagnostic test because it is rapid and can help to identify biliary sources. CT is more specific and can identify other causes of liver abscess, such as extension from an intraabdominal abscess. The right lobe is most commonly infected, and 50% of cases are multifocal.

Drainage of liver abscesses is essential. Percutaneous aspiration of the abscess is therapeutic and diagnostic. Repeated aspirations or catheter placement may be necessary. Antibiotics are directed by the likely source and by results of Gram stain and culture. Blood cultures are positive in 50% of cases and may be