



California Pacific
Medical Center

A Sutter Health Affiliate
With You. For Life.

Non-Cancerous Liver Lesions

LIVER DISEASE MANAGEMENT & TRANSPLANT PROGRAM

At California Pacific Medical Center we are committed to bringing new and advanced diagnostic tools, medical treatments and surgical options to the physicians and patients we serve. Through this procedure profile, our physicians illustrate current and emergent treatment options we can provide for the specialized medical management of your patients.

Our promise to our patients is to deliver the highest quality expert care with kindness and compassion. We go beyond medicine to treat the whole person, not just the illness. Because medicine can transform a body. But going beyond medicine can transform a life.

For patient referrals:

1-888-637-2762

www.cpmc.org/liver

Beyond Medicine.

Overview

Masses within the liver are increasingly being detected inadvertently when patients are evaluated for unrelated reasons. These liver masses are usually benign (non-cancerous) in patients without underlying liver disease and usually need no specific treatment. We recommend that the work-up and management of benign lesions be overseen by a multidisciplinary team including radiologists, hepatologists, oncologists and surgeons—which exists at California Pacific Medical Center—to ensure a patient receives the best possible care.

Benign masses can be categorized into two groups: solid or cystic (fluid filled).

Solid Masses

Among the most common solid masses include:

- Hemangioma
- Focal nodular hyperplasia
- Adenoma
- Focal fatty change
- Nodular regenerative hyperplasia

HEMANGIOMAS are the most common of all benign liver masses. They are more prevalent in women and may be affected by hormonal changes. Symptoms such as pain are mostly noted in lesions >6 cm and are related to compression of adjacent structures. Bleeding is rare. Diagnosis of these lesions is usually made radiologically with magnetic resonance imaging (MRI) offering the most definitive means of diagnosis. No specific treatment is required for asymptomatic lesions whatever the size. Surgical resection is the treatment of choice for symptomatic lesions.



Hemangioma

FOCAL NODULAR HYPERPLASIA (FNH) is the second most common benign lesion of the liver. It is usually asymptomatic and has no malignant potential or risk of rupture. Symptomatic lesions are usually larger and cause compression of adjacent structures. Laboratory studies are usually normal and diagnosis is made radiologically. At times a biopsy may be needed. Surgical resection is indicated only if the diagnosis is of question or the patient is symptomatic.



Focal Nodular Hyperplasia

ADENOMAS are a rare entity and have a strong association with oral contraceptive use. Larger adenomas (>5 cm) may present with abdominal

discomfort or a feeling of fullness. Other symptoms include nausea, vomiting and fevers. Larger lesions have a tendency to bleed (40%) and have a potential to become cancerous (10%). Diagnosis of these lesions is made by a combination of radiographic examinations and sometimes biopsy. Treatment should consist of first discontinuing oral contraception use and then radiographic follow up. Additionally, all lesions >4 - 5 cm or where malignancy cannot be excluded should be surgically resected.



Hepatic Adenoma

FOCAL FATTY CHANGE occurs when fat distribution within the liver is not evenly spread. Areas of increased fat accumulation are referred to as focal fatty change. Patients who have a history of diabetes, obesity, hepatitis C or malnutrition may be predisposed to this condition. Individuals are usually asymptomatic. These lesions are diagnosed by radiographic examination (MRI) and at times require a biopsy. No specific treatment is required.



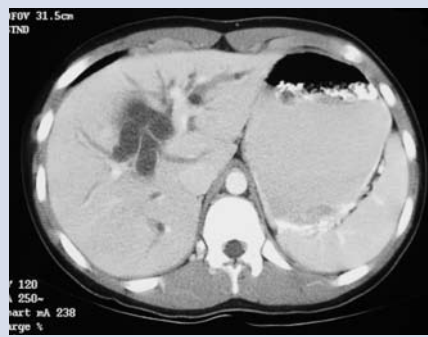
Focal Fatty Change

Cystic Masses

Two major categories of cystic masses exist and are related to either an infectious or a non-infectious cause.

Non-Infectious Cystic Masses

BILE DUCT (CHOLEDOCHAL) CYSTS may be present from birth (congenital) or may arise later in life. There appears to be a higher incidence of this process in females. Adult onset choledochal cysts are usually an incidental finding. If symptomatic, the patient may present with pain under the right rib cage, nausea, vomiting, fever and/or jaundice. In extreme cases, a patient may present with back pain. Patients may rarely present with inflammation of the liver and sometimes cirrhosis of the liver due to chronic obstruction of the bile duct. In addition to laboratory studies, a variety of imaging modalities may be needed. More invasive studies by a gastroenterologist or an interventional radiologist are required to fully delineate the extent of the disease process. Biopsy of the bile duct may be needed to rule out bile duct cancer. The presence of cancer may be known either before or at the time of the operation. The operation consists of resecting the diseased bile duct and reconnecting the remnant to the small intestine. A transplant evaluation is needed if liver cirrhosis is noted on the preoperative workup.



Bile Duct Cyst

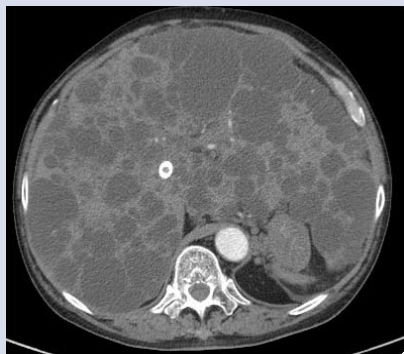
A SIMPLE LIVER CYST is usually a single cyst located within the liver, which is present from birth. Most cysts are asymptomatic and are uncommonly diagnosed before age 40. If symptomatic, patients complain of abdominal fullness and pain. Diagnosis is made radiographically. No specific treatment is needed in cases where the cyst is <8 cm in diameter or is within the confines of liver tissue. Infectious or cancerous causes as well as possible communication with the bile duct system must be ruled out prior to performing an operation. Smaller symptomatic cysts may be needle aspirated to determine if symptoms improve prior to a definitive procedure. Marsupialization (widely opening the cyst to drain into the abdominal cavity) is the approach of choice. In certain cases, the location of the cyst may preclude marsupialization and may require a partial liver resection.



Liver Cyst

POLYCYSTIC LIVER DISEASE (PCLD) is an inherited condition and may be associated with cystic lesions of the kidneys. Most patients are asymptomatic with normal laboratory studies. The liver cysts are multiple and tend to enlarge slowly. Symptoms are similar to that of simple cysts. Ultrasound and CT scans are reliable in detecting the lesions. These cysts must be differentiated from multiple simple cysts given that PCLD is an inherited disease. There are genetic tests available to

help counsel afflicted patients and families. Treatment for PCLD is similar to the treatment of simple cysts. A liver, kidney or combined liver-kidney transplant may be necessary depending on disease severity of the organs afflicted.



Polycystic Liver Disease

Infectious Cystic Masses

PYOGENIC LIVER ABSCESSSES

(bacterial cause)—There are numerous causes of bacterial infections that bring about abscess formation in the liver. Presently, disease processes within the bile duct that cause bile flow obstruction are the most common cause of pyogenic abscesses. Other causes include intra-abdominal infections (i.e. appendicitis or diverticulitis), trauma to the liver, or ablative therapies (TACE, RFA) used to treat liver cancer. Finally, distant infectious processes such as dental abscesses and endocarditis may cause liver abscess formation. A specific source is not identified in up to 55% of cases. Patients can present with fevers, chills, nausea, vomiting, abdominal pain and loss of appetite. Some may present with a severe illness if rupture of the abscess into the abdominal cavity has occurred. The diagnosis can be made with a combination of history and physical examination, laboratory studies and radiologic examination.

Treatment depends on the clinical condition of the patient and radiologic findings. Typically, antibiotic therapy is initiated and the abscess is drained using a catheter placed directly into the abscess by the radiologist (90% successful) or surgical intervention is needed in more severe cases.

AMEBIC LIVER ABSCESS—Amebic infection or amebiasis is a common infection in the tropics. In the United States individuals at risk for amebiasis are those who have immigrated from or traveled to endemic areas. The organism responsible for the disease process is *Entamoeba Histolytica*. Transmission usually occurs via ingestion of infected water. Liver abscess formation occurs when the ameba penetrates through the intestines and into local veins that drain into the liver. Liver abscesses are more common in patients who are immunocompromised, malnourished or have a malignancy. Less than one-third of the patients have intestinal symptoms prior to the diagnosis of liver abscess. Patients usually present with acute abdominal pain and fevers. Up to 8% of patients present with mild jaundice. Tests to detect antibodies in the blood (positive in up to 95% of patients) are available and should be performed. Various radiologic studies can be used to help in the diagnosis. Treatment is primarily with antibiotics. Aspiration of the abscess is rarely indicated. An operation is indicated if worsening infection is noted despite adequate medical therapy.



Amebic Liver Abscess

HYDATID CYSTS—These liver cysts are caused by a parasitic organism found in dogs. *Echinococcus granulosus* or *Echinococcus multilocularis* are parasites (tapeworms) that infect dogs. Tapeworm embryos are present in the feces of dogs. After inadvertent ingestion, the tapeworm embryo will penetrate the intestine and usually find its way to the liver. It may also migrate to other structures such as the lung, spleen, brain, bone or kidney after entering the bloodstream. Cysts are usually visible three weeks after ingestion and continue to secrete fluid causing compression of the liver. Cysts <5 cm are usually asymptomatic and no specific treatment is required.



Echinococcal (Hydatid) Cyst

Patients usually have symptoms of abdominal fullness. Pain usually is noted when cysts get infected or rupture. The most common site of rupture is into the bile ducts within the liver causing symptoms of bile duct obstruction and infection.

Some patients may present with an allergic reaction after cyst rupture. Radiologic studies used to diagnose hydatid cysts are ultrasound and CT scans. Antibody tests are available to detect hydatid cysts and should be completed. Treatment options range from chemotherapy (mebendazole and albendazole) to surgery. Surgery can entail a conservative approach (various drainage type procedures) or a radical operation that removes the entire cyst with a rim of normal liver.

Why Choose Us?

California Pacific's Liver Disease Management and Transplant Program offers comprehensive specialty care for adult end-stage liver disease. We emphasize ongoing communication with referring physicians and incorporate them into the decision process of their patient's medical management. We follow up our care with an organized discharge report to the referring physician.

For patients requiring hospitalization, we have a dedicated critical care liver unit, hospitalists who specialize in liver disease, physician assistants, on-call anesthesia staff and a specialized O.R. nursing team.

At California Pacific, our focus is on going beyond medicine. We look intently at each individual case and treat the whole person, not just the illness. Because medicine can transform a body. But going beyond medicine can transform a life.

Research

Our Hepatology Research Center has a comprehensive clinical research program, offering concurrent trials for various liver diseases. We also have a Liver Immunology Laboratory that serves as a hub for collaborative viral hepatitis research in the Bay Area. We are proud to be at the forefront of advances and research affecting our patients. Multiple pharmaceutical studies and clinical research trials using new, ground-breaking medications and procedures in the area of viral hepatitis, liver cancer, gastroenterology and liver transplantation are continually being pursued in our Research Center. Hepatology and gastroenterology study locations are available throughout Northern California, with sites in San Francisco, Oakland and Sacramento. Clinical trial information is available on the Web at www.cpmc.org/liver.

For more information

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