

BMDA Liver Metastases

Metastasis of Tumors to the Liver

The liver is a very common destination for spread of tumors from another site (the primary tumor), spreading through the blood to lodge and grow in the liver (and sometimes other parts of the body). The most common tumors which spread to the liver include gastrointestinal (GI) tract primary tumors such as esophagus, stomach, pancreas, small intestine, and colon/rectum. Other common tumors which spread to the liver include neuroendocrine tumors and retroperitoneal sarcomas (soft tissue tumors from the back of the abdomen). But almost any type of tumor can spread to the liver.

About the Liver

The liver:

- Is located in the right upper section of the abdomen, beneath the ribs.
- Is surrounded by the stomach, the diaphragm, the gallbladder and the intestine (Figure 1).
- Is one of the largest organs of the body, representing approximately two percent of the total body weight.
- Has two lobes – right and left – which are further divided into eight segments (Figure 2).
- Carries out essential functions – processes byproducts of digested food; secretes bile that helps in the digestion of food; maintains the metabolism of fats, cholesterol, carbohydrates, and proteins; and produces important proteins (albumin, clotting factors, etc.).

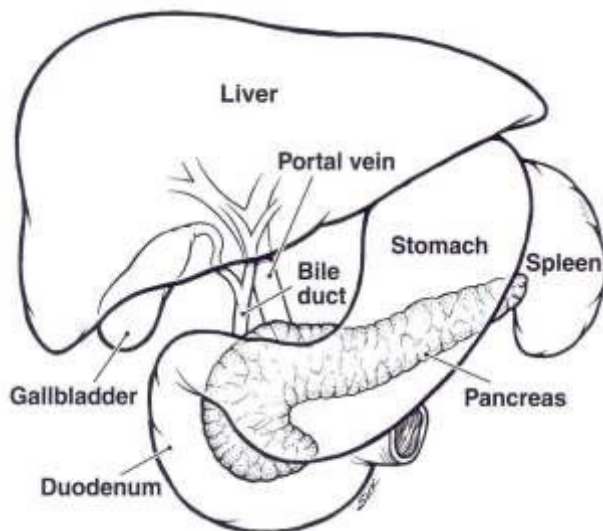


Figure 1
The liver and surrounding organs

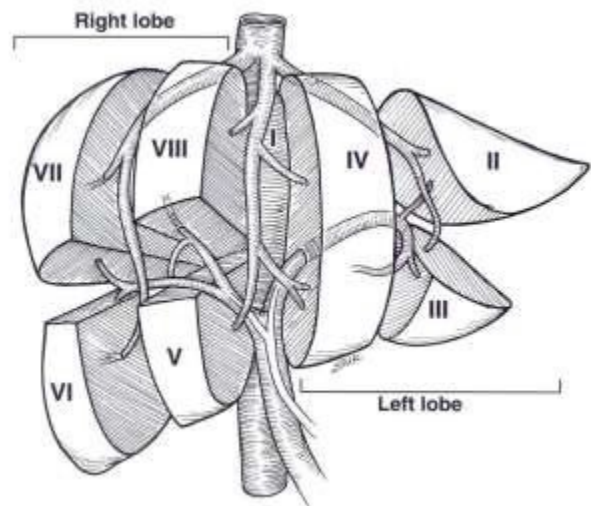


Figure 2
The liver, divided into lobes and segments

Detecting Metastases

Metastatic cancer develops when tumor cells have spread through the bloodstream from the primary site within the body to a different site. The tumors can already have spread by the time of cancer diagnosis (synchronous metastases – meaning “same time”) or can spread later, often after the primary tumor has already been treated or removed (metachronous metastases – meaning separated in time).

Metastases to the liver often do not cause symptoms. Often the cancer is only discovered during routine follow-up tests, such as blood tests or scans. Occasionally, patients can develop symptoms which can give a clue to the spread. Rarely if ever do tumors in the liver change the function of the liver or cause the liver to fail.

Symptoms

Many patients do not experience symptoms. Some symptoms of metastatic liver disease you may experience are described below.

Pain

Many patients do not experience pain since the only sensory part of the liver is the outer capsule. However, pain associated with metastatic liver disease may be located on the upper, right side of the abdomen, in the right shoulder, or in the right, upper back.

Indigestion, Loss of Appetite, Nausea and Weight Loss

These symptoms can occur when a liver tumor presses against the stomach and small intestine. However, problems with digestion may also occur for complex reasons not specifically related to the location of the tumor.

Jaundice

Jaundice occurs when a substance called bilirubin builds up in the blood. This buildup causes a person to become noticeably yellow, or jaundiced. Bilirubin is made in the liver and then travels down the bile duct just before emptying into the first section of the small intestine. If a large amount of the liver is replaced by a tumor, or if the bile duct becomes blocked, bilirubin builds up in the blood. This buildup can also cause itching and yellowing of a person’s eyes. Blocked bile ducts can increase the risk of infection, including sepsis (infection in the blood). The person may also notice dark urine and chalky or pasty white stools.

Fever

Fever without infection can be associated with metastatic liver disease. However, fever is always a possible sign of infection. Infection should first be ruled out with appropriate testing, especially when fevers are 101.5°F (38.5°C) or higher.

Abdominal or Leg Swelling

Ascites (abdominal fluid build-up) can occur with long-standing liver disease like hepatitis or cirrhosis, as well as with liver tumors. It may be accompanied by swelling of the legs. Abdominal and leg swelling can also be caused by other illnesses such as heart or kidney disease.

Treatment

Individual cases are discussed at a multidisciplinary conference. Doctors from all the relevant specialties (surgery, medicine, radiation, gastroenterology, diagnostic radiology and pathology) review each case and make recommendations for the most appropriate treatment plan.

The treatment recommended for you will depend on: the extent of your disease; whether or not the cancer has spread outside the liver; the specific type of metastatic cancer and your general health. Your test results will help your doctor plan a treatment program that is best suited for you. There are four forms of treatment for metastatic cancer in the liver: surgery, liver directed therapy (treatments given to the liver, usually via the hepatic artery) procedures performed by interventional radiology physicians, chemotherapy and radiation therapy. One of these or a combination of these treatments are usually recommended.

Surgery

Depending on where the tumor(s) are located and if the tumor has not spread outside the liver, then surgery may be recommended. Surgery may include:

- Removing the area of the liver containing the tumor (resection)
- Killing the tumor using a needle that destroys the tumor with heat (microwave ablation)
- Implanting a device called a hepatic artery infusion (HAI) pump to give chemotherapy directly to the liver
- Any combination of the above

Interventional Radiology Procedures

A catheter can be inserted into a blood vessel in the patient's leg and fed up to the liver to find the blood vessels supplying the tumor. Blocking agents are then injected into these blood vessels to obstruct the blood supply to the tumor, thereby killing the cancer cells. Sometimes, these blocking agents are combined with chemotherapy or microparticles which can radiate the liver tumor from the inside. Interventional radiology teams can also perform ablation procedures, where a needle is placed through the skin or into the tumor to kill the cancer cells by heating them.

Chemotherapy

Chemotherapy is the use of drugs to kill cancer cells. The drugs are usually given intravenously (into a vein), but can also be given by mouth or through a device called a pump. Some patients receive chemotherapy through a hepatic artery infusion pump that is placed during surgery. This pump is placed under the skin of the abdomen, and has a tube that goes directly into the liver to deliver chemotherapy. The tip of this pump tube is placed in the hepatic artery to directly infuse treatment into the liver. Other types of pumps are used for delivery of drugs into the vein, but can be carried home overnight to prevent a hospital stay.

Radiation Therapy

This treatment uses radiation waves to kill cancer cells. Radiation is administered by a machine directed at the area of the body to be treated. Following planning with computer simulation, treatments are given on an outpatient basis, for two to five weeks. Radiation therapy is not used as commonly in the treatment of liver tumors as are surgery and chemotherapy. However, sometimes radiation is given together with chemotherapy or during surgery.

Surgery

If a tumor can be removed, surgery is recommended. Figure 3 on page 5 shows the extent of the typical surgeries used to remove liver tumors. Up to 75 percent of a normal liver can be removed since the liver can regenerate (grow back). If the liver has been damaged from hepatitis, cirrhosis or fatty in-growth, then a smaller amount of liver may be removed safely. The liver is the only organ of the body capable of growing back after surgery.

In some patients, a combination of resection and radiofrequency ablation is used.

Post-operatively, patients are often admitted to the hospital for 3-7 days. Overall recovery may take up to 2 months until patients are 100% back to normal but most patients are doing well by the time they are discharged home.

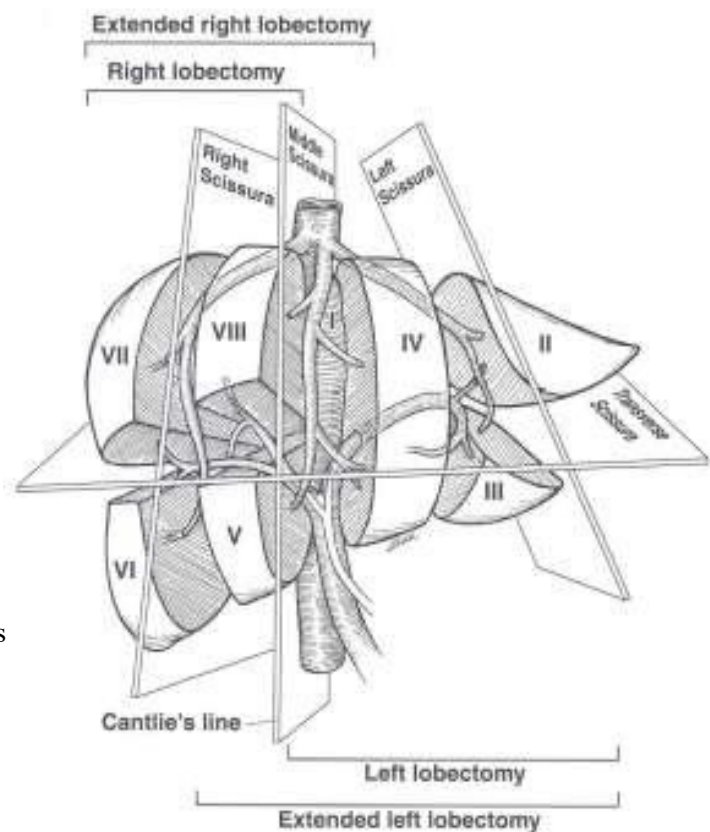


Figure 3
Extent of surgeries used to remove liver tumors

What if the tumor cannot be removed by surgery?

If a tumor has spread beyond the liver or cannot be removed surgically, the next best treatment is chemotherapy. Many different chemotherapy drugs and combinations of drugs are available for treatment. The appropriate drug therapy will depend on your specific type of cancer, the extent of your disease and your physical condition. Your medical oncology team will explain the chemotherapy options, the expected outcomes and the associated side effects.

Some patients may be asked to take part in studies called clinical trials that test new treatments. These treatments may include new chemotherapy drugs or new combinations of drugs. Radiation therapy treatments are sometimes a part of these clinical trials.

As more effective drugs become available, the treatment options for metastatic liver cancer may change. Your doctor will discuss the risks and benefits of various treatment options with you and your family. Ask your doctor any questions you have about the cancer or its treatment so that you understand and feel comfortable with your treatment decision.

Many people are aware of the statistics regarding prognosis, or life expectancy, for metastatic liver disease. However, statistics can be misleading. If you have questions about your prognosis, ask your medical team.

Chemotherapy

Chemotherapy may be given before or after surgery. The schedule depends on the particular drug(s) given. Patients receiving chemotherapy and radiation therapy do not need to be admitted to the hospital for these treatments. Chemotherapy is usually given four to six weeks after surgery to allow the liver to regenerate.

Nutrition

Before Treatment

To keep your body strong, it is important to maintain your weight before, during and after therapy.

Good nutrition helps minimize the side effects of treatment. Side effects from chemotherapy and surgery may affect your ability to eat and may cause your body to need more calories than usual. Eating four or five small meals a day that are part of a balanced diet will help you maintain your weight and your strength. If needed, you may talk to a dietitian who will help you with any nutrition questions or problems.

After Treatment

A dietitian is available to help you meet your nutritional needs. A high protein and low fat diet will help your liver regenerate after surgery. Maintaining a healthy weight is important as well to prevent a fatty liver.

Living with Metastatic Cancer

Having cancer can change your life and the lives of your family members and friends in many ways. Patients and their families often feel shock, anger, sadness, fear, frustration and confusion when faced with a cancer diagnosis.

Living with any serious disease can be difficult and challenging. Many patients find it helpful to share their thoughts and feelings with a professional counselor or with other patients who are going through a similar experience.

If you have questions or concerns after reading this material, please ask a member of your health care team. You can also ask for copies of your medical records including pathology reports, surgery notes and other medical records, to keep a set for yourself.

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