CANCER OF THE LIVER

Tumors of the liver are classified as being either primary (originating from the liver) or metastatic (spread from another body organ to the liver). Primary liver tumors may be further divided into those that are benign (not cancerous and remain in the liver) or malignant (cancerous and may spread to other parts of the body).

Benign Tumors

The most common benign tumor of the liver is a **cavernous hemangioma**. This tumor, as well as other benign tumors, is typically found by chance on an imaging study of the liver, such as ultrasound or computed tomography (CT). Unless it is extremely large, no specific therapy is usually required. This tumor may enlarge in women taking hormone pills; thus, physicians will often recommend discontinuing birth control pills or postmenopausal hormone replacement therapy.

The other common benign tumors of the liver are called **hepatocellular adenoma** and **focal nodular hyperplasia**. Both of these tumors are also usually found by chance, although hepatocellular adenoma has a substantial risk of bleeding within the tumor and into the peritoneal (abdominal) cavity. The use of a number of imaging tests, and occasionally hepatic arteriography or biopsy, may be required to make the diagnosis of this tumor. Hepatocellular adenomas are also quite sensitive to hormonal therapy and may regress when birth control pills or hormones are stopped. If feasible, removal of hepatic adenoma may be recommended if it is large in order to prevent the possibility of bleeding and/or rupture.

Malignant Tumors

The most common primary malignant tumor of the liver is a **hepatocellular carcinoma.** Primary liver cancer accounts for less than 1% of all cancers in this country. However, in other parts of the world it is a major health problem, causing up to 50% of cancer cases. This difference is thought to be due to the much higher percentage of the population who are carriers of the hepatitis B virus, which predisposes to the development of hepatocellular carcinoma.

It was recognized a number of years ago that chronic carriers of the hepatitis B virus, particularly those with chronic hepatitis or cirrhosis, are at substantially increased risk to develop hepatocellular carcinoma. Recent evidence indicates that patients who have long-standing chronic hepatitis C virus infection are also at increased risk for the development of hepatocellular carcinoma, although the exact risk is uncertain. Certain toxins and chemicals are also rarely associated with liver cancer. In Africa, aflatoxin, a product of mold found in badly stored peanuts or other foods, has been recognized as a cause of liver cancer. Finally, other diseases such as cirrhosis caused by iron overload (hemochromatosis) are associated with an increased risk of hepatocellular carcinoma. Patients with long-standing alcoholic cirrhosis are also at risk for developing this tumor. Two congenital disorders, alpha$_1$-anti-trypsin deficiency and tyrosinemia, may also be complicated by the development of hepatocellular carcinoma.

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Metastatic or secondary tumors of the liver come from cancers originating elsewhere in the body. Because the liver filters blood from all parts of the body, it is often the site in which cancer cells will lodge and develop into metastatic nodules. An enlarged liver secondary to cancer may be an early sign of cancer in other organs. Secondary or metastatic cancer should not be confused with primary cancer of the liver.

Primary liver cancer may be detected by screening high risk patients or by chance on an imaging study of the abdomen performed for another reason, or it may be detected because of symptoms such as abdominal pain. Studies performed in several countries have demonstrated that the periodic use of abdominal ultrasound and a blood tumor marker, called alpha-fetoprotein, may lead to the early detection of small hepatocellular carcinomas in patients at high risk. This screening strategy has not been widely adopted because its cost-effectiveness has yet to be proven. In patients who develop symptoms from more advanced hepatocellular carcinoma, weight loss, periodic severe pain and other generalized symptoms may occur. Health may deteriorate rapidly and jaundice (yellow skin) may appear.

The diagnosis of primary cancer of the liver is typically made by liver imaging tests, such as abdominal ultrasound and CT scan in combination with the measurement of blood levels of alpha-fetoprotein. The final diagnosis is confirmed by needle biopsy, which is typically performed by a radiologist who can direct the biopsy needle to the exact position of the tumor. It may be necessary to also examine the arteries and veins of the liver by hepatic arteriography, particularly if surgery is considered.

Treatment of primary cancer of the liver may be directed towards a cure, or focused at palliation (the relief of symptoms and prolongation of life). When the tumor is small and limited to one lobe of the liver, surgical removal offers a chance at cure. If the tumor is larger or involves more than one lobe of the liver such that it cannot be removed, liver transplantation has also been performed. In either case, the cure rate averages only 20-30%, which has limited somewhat the use of liver transplantation for this problem.

There are a number of newer therapies that offer good palliation for hepatocellular carcinoma. In particular, the direct injection of alcohol into the tumor via a small needle or the embolization at the time of hepatic arteriography of a specific chemotherapeutic agent (chemo-embolization) has resulted in prolonged survivals. These measures may also be used together with either surgical resection or liver transplantation.

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