The HCV Advocate

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Medical Writers' Circle

March • 2003

a series of articles written by medical professionals about the management and treatment of Hepatitis C

Hepatocellular Carcinoma

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Hepatocellular carcinoma is the most common primary malignant tumor of the liver. Primary liver cancer accounts for less than 1% of all cancers in this country. It is the seventh most common cause of cancer related deaths in men and the ninth in women. However, the incidence in the United States has increased during the past two decades possibly due to a large pool of people with longstanding hepatitis C. In other parts of the world, such as in sub-Saharan Africa, People's Republic of China, Hong Kong and Taiwan, it is a major health problem because of the high exposure to hepatitis viruses like B and C and to regional exposure to environmental pathogens. In Africa and in Taiwan, Aflatoxin, a product of mold that commonly contaminates badly stored peanuts, corn, and soybeans has been recognized as a cause of liver cancer. In rural China, drinking pond-ditch water contaminated with the algal toxin microcystin has also been associated with hepatocellular carcinoma. Patients with longstanding chronic hepatitis or cirrhosis who have hepatitis B, C, or hereditary hemochromatosis have the highest risk of developing hepatocellular carcinoma. However, patients with longstanding alcoholic cirrhosis are also at risk for developing this tumor. Two congenital disorders, Alpha-1-antitrypsin deficiency and Tyrosinemia, may also be complicated by the development of hepatocellular carcinoma. Older patients with longstanding (chronic) liver disease are also more likely to develop this tumor.

Detection of hepatocellular carcinoma can be difficult as most of the patients who develop this tumor have no symptoms other than those related to their longstanding liver disease. The onset of abdominal pain, weight loss, early satiety, jaundice and a palpable mass in the upper abdomen usually indicate an advanced cancer. It may be detected by screening high risk patients or by chance on an imaging study of the abdomen performed for another reason, or if the patients have symptoms. 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. Unfortunately, serum AFP levels are normal in 40 percent of patients with hepatocellular carcinoma of less than 2 cm in diameter and in 28 percent of those with tumors 2 to 5 cm in diameter. Not all hepatocellular carcinomas, the fibrolamellar type, for example, secrete AFP. On the other hand, AFP could also be elevated in pregnancy, with other tumors of gonadal origin and even in acute or chronic viral hepatitis without a tumor.

The diagnosis of hepatocellular carcinoma is typically made by liver imaging tests such as abdominal ultrasound, helical CT scan or triple phase CT scan in combination with measurement of blood levels of alpha-fetoprotein. In patients who are allergic to the CT contrast dye or have renal (kidney) insufficiency or if the result of the CT is ambiguous, an MRI (Magnetic Resonance Imaging) may be indicated.

Assessment of the tumor size, number, location, metastasis outside the liver, patency and or invasion of the arteries and veins of the liver by the tumor as determined by the liver imaging tests help in the decision as to the mode of therapeutic or palliative intervention that is appropriate. At times, angiography is done and used in conjunction with chemoembolization. The final diagnosis is confirmed by needle biopsy which is usually performed by a radiologist who can direct the biopsy needle to the exact location of the tumor under sonogram or CT scan guidance.

Treatment of hepatocellular carcinoma maybe directed towards a cure, or focused towards palliation (the relief of symptoms and prolongation of life). When the tumor is small (less than 5 cm), limited to one lobe of the liver, without evidence of invasion of the liver vasculature and in a well preserved liver function, surgical resection offers a chance of cure. If the tumor is larger or involves more than one lobe of the liver such that it cannot be removed, liver transplantation maybe an option. However, the result of liver transplantation is more promising (recurrence-free survival rates of 83 to 92 percent in 3-4 years) for tumors that are 5 or less than 5 cm in diameter with no involvement of the blood vessels of the liver and no spread to surrounding lymph nodes, lungs, abdominal organs, or bone. Achievement of this result is contingent upon a short waiting time between the diagnosis of the hepatocellular cancer and the actual performance of the transplant, and, as a result, the listing criteria for liver transplantation have been modified to give priority to patients with known or suspected hepatocellular carcinoma.

There are a number of other therapies that offer good palliation to localized (liver only) hepatocellular carcinoma, such as radiofrequency ablation (RFA) whereby a needle electrode is advanced into the tumor under ultrasound guidance and then attached to a radiofrequency generator and treatment is performed. Another modality is percutaneous ethanol injection (PEI) which is a low cost, minimally invasive and widely acceptable procedure. Transarterial embolization may be combined with PEI. It involves the injection of a chemotherapeutic agent into the hepatic artery from which the tumor gets the majority of its blood supply. Chemotherapy has not been used routinely for patients with advanced hepatocellular carcinoma; however, there are ongoing studies using single agents and combination chemotherapy. All of these methods have their particular indications, contraindications and complications. Treatment options are dictated by the extent and stage of the tumor and functional reserve of the liver.

Hepatocellular carcinoma is an aggressive tumor and may be at an advanced stage when detected. The median survival following diagnosis is approximately 6 to 20 months.

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