

Mini Review

Liver Hemangiomas: A Wide Range of Management from Observation to Hepatic Transplantation

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Abstract

Hepatic hemangiomas are the most common benign primary tumors of the liver. Although they are usually incidental findings during imaging studies of the abdomen performed for other reasons, hemangiomas warrant therapy if they are causing significant symptoms. Clinical presentation of hemangioma may mimic that of hepatocellular carcinoma. Furthermore, radiologic features on computed tomography and magnetic resonance imaging may not be typical for hemangioma and can be confused with hepatocellular carcinoma. The management of a large (>10 cm) hepatic hemangioma is controversial. Moreover, the management of a large asymptomatic lesion is not clear-cut. In the present study, we reviewed the clinical approach to hemangiomas and the management, from observation to hepatic transplantation.

INTRODUCTION

Hemangiomas are noncancerous liver tumors composed of a mass of abnormal blood vessels. They are the most common benign primary tumors of the liver. The prevalence ranges from 0.4% to 20% [1]. In the United States, about 1 to 5% of adults have small hemangiomas that cause no symptoms. These lesions are usually incidental findings during imaging studies of the abdomen performed for other reasons. They are usually found in patients aged between 40 and 60 years, more frequently in women. In 30–35% of patients the lesions are multiple [2]. If larger than 10 cm, they are termed ‘giant’ hemangiomas.

Although approximately 85% of hemangiomas are clinically asymptomatic, the risk of complication rises with increasing size, and treatment can be obligatory. Symptoms are more likely if hemangiomas are larger than about 4 cm [2]. These tumors may cause abdominal discomfort and bloating and, less often, loss of appetite, nausea, a feeling of being full after eating a small meal, and pain. In infants, hemangiomas usually disappear on their own [3]. However, occasionally hemangiomas are large and cause problems, such as platelet sequestration (Kasabach-Merritt syndrome), widespread blood clotting and heart failure [1,3].

In a very small minority of patients, vomiting, abdominal pain, distension, palpable mass, obstructive jaundice, bleeding, and signs and symptoms of Budd-Chiari syndrome may develop due to compression of bile duct, hepatic vein, portal vein, and adjacent organs [4]. Occasionally, external compression of

inferior vena cava may lead to edema and/or indirect symptoms such as deep vein thrombosis of the lower limbs.

These tumors are usually detected only when ultrasonography, computed tomography (CT), or magnetic resonance imaging (MRI) is done for unrelated reasons. Such incidental tumors usually do not require treatment. In growing lesions, clinical observation or follow-ups may be necessary. However, the most important clinical significance of hemangiomas are the differential diagnosis from hydatid cysts and liver cancers. Clinical presentation of hemangioma may mimic that of hepatocellular carcinoma. Furthermore, radiologic features on computed tomography and magnetic resonance imaging may not be typical for hemangioma and can be confused with hepatocellular carcinoma. Previously, we presented such a patient treated with liver transplant for hemangioma mimicking hepatocellular carcinoma [5]. This case report illustrates the atypical imaging appearance of hemangioma and possible confusion it can cause in diagnosing hepatocellular carcinoma, especially in a hepatitis C carrier.

In symptomatic cases, these tumors require treatment, which may include drugs (such as corticosteroids), a procedure to block the hemangioma’s blood supply (selective hepatic artery embolization), sometimes surgery to remove the tumor, and, rarely, liver transplantation (Table 1).

Once the diagnosis of hepatic hemangioma is confirmed by radiologic studies, it remains uncertain whether follow-up

Table 1: Updated clinical approach to liver hemangiomas.
Clinical observation
Medication (corticosteroids, growth factor and kinase inhibitors)
Radiofrequency ablation
Hepatic irradiation
Arterial embolization
Enucleation
Hepatic resection (segmentectomy, lobectomy, hepatectomy)
Liver transplantation

radiologic studies are warranted to reassess the size of the tumor. In our practice, patients typically undergo ultrasonography at 6 months and at 12 months after the initial diagnosis. Providing that no change in hemangioma size has occurred, long-term follow-up radiologic studies are probably not necessary. However, there are a number of important exceptions to this practice. Patients who are undergoing treatment with estrogens or have become pregnant may require follow-up imaging studies. Finally, patients with large hemangiomas (ie, >10 cm) may deserve long-term follow-up radiologic studies, perhaps annually, because of their probable increased risk of complications and a possibility of intraabdominal rupture [6,7].

Until relatively recently, no medical therapy capable of reducing the size of hepatic hemangiomas had been described, other than corticosteroids. A case report in 2008 demonstrated reduction in the size of hepatic hemangiomas in a patient treated for colon cancer [8]. The patient had received bevacizumab, a monoclonal antibody capable of inhibiting the activity of vascular endothelial growth factor (VEGF). Sorafenib, a multikinase inhibitor, was used in the management of a 76-year-old man with a giant cavernous hemangioma measuring more than 20 cm in diameter [9]. Tumor volume has shown to be decreased significantly.

Surgical resection may not be possible in certain cases because of the patient's comorbidities. Arterial embolization is an option in such circumstances. Branches of the hepatic artery can be embolized with polyvinyl alcohol and other substances. A recent report described 27 patients with symptomatic giant hemangiomas who underwent successful embolization with bleomycin mixed with lipiodol [10]. Embolization results in shrinking of the tumor, thereby minimizing the risk of complications. Other minimally invasive therapies for hepatic hemangioma include radiofrequency ablation and hepatic irradiation, as studied in some limited case series [3,11].

Surgical treatment may be appropriate in cases of rapidly growing tumors [12]. Surgery may also be warranted in cases where a hepatic hemangioma cannot be differentiated from hepatic malignancy on imaging studies. Traditionally, surgical resection and surgical enucleation are the treatments of choice. Orthotopic liver transplantation has been performed as treatment in rare circumstances [13,14]. On the other hand, it has been reported that liver with hemangiomas could be used as allograft in liver transplantation settings [15]. The use of the liver allograft with hemangiomas can be remarkable strategy to reduce the problem of organ shortage without any unfavorable

consequences in both living donor and recipient. In a case report of Onishi et al, successful adult-to-adult living donor liver transplantation was performed using liver allograft after the resection of hemangioma [15].

The classic indications for either surgery are the relief of symptoms due to the hemangioma or the treatment of a spontaneously ruptured hemangioma. The latter event is potentially life-threatening. However, emergent surgical resection of the ruptured hemangioma is associated with a high mortality rate. The priority in a patient with a ruptured hepatic hemangioma is hemodynamic stabilization. Once the patient is stabilized, formal surgical resection of the hepatic hemangioma can be performed.

The management of a large (ie, >10 cm) hepatic hemangioma is controversial. Certainly, large symptomatic hemangiomas should undergo treatment. However, the management of a large asymptomatic lesion is not clear-cut. Some surgeons have advocated resection of such lesions because of the potential risk of spontaneous rupture, intratumoral hemorrhage, or high-output congestive heart failure [16]. However, recent literature does not support a routine resection for silent large hemangiomas since the rate of complications is quite low.

The size and location of a lesion will influence the surgeon's decision to perform either a formal segmental resection of the hemangioma or an enucleation of the hemangioma. Typically, these procedures are performed using an open approach, but laparoscopic surgery can be performed in some cases [17]. Hepatic lobectomy may be necessary in the case of large lesions. In general, surgical resection is safe and is well tolerated by patients. Large series have not reported mortality and postoperative morbidity is minimal. Orthotopic liver transplantation is occasionally offered to symptomatic patients with large or diffuse lesions. Several cases have now been reported in the medical literature [13,14]. However, we do not recommend such a big surgery for a benign lesion except an accompanying cirrhotic disease or a diagnostic uncertainty in differential diagnosis from a hepatic carcinoma.

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