Management of Benign Liver Tumors

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This special issue of *Digestive Surgery* is dedicated to benign hepatobiliary lesions and summarizes the international expert discussions that focused on this topic during a one-day symposium held in Amsterdam on April 23, 2009. The rationale of this meeting was that these tumors are increasingly recognized as a result of recent technical advances in abdominal imaging modalities as well as their widespread use. In addition, management of benign hepatobiliary lesions has evolved sufficiently over the past decade to warrant an update.

Many benign liver lesions are an incidental finding in patients with no specific symptoms and it is in the first place crucial to establish the correct diagnosis as the natural history of these tumors varies widely. However, in patients who are evaluated because of upper abdominal complaints, another difficulty is to make sure that the benign liver tumor and not an associated condition is indeed responsible for the symptoms. This is particularly true for biliary cysts and liver hemangiomas which are the most frequent and the least symptomatic of these tumors. Overall, there is a bad correlation between a liver tumor and complaints and any benign tumor <3–5 cm is unlikely to be symptomatic.

Although the list of possible benign lesions in the liver is long, only those lesions that currently generate discussion are dealt with in this issue. The most common benign liver lesions are hemangiomas and simple cysts. The diagnosis of hemangiomas is fairly straightforward

provided all typical features are present on contrast-enhanced MRI or CT. Giant hemangiomas (>5 cm) are frequently associated with abdominal pain or discomfort and may give rise to specific complications necessitating resection. The correct interpretation of cystic lesions mainly relies on ultrasound and MRI. Their diagnosis is also fairly straightforward except in those patients whose simple cysts have become atypical as a result of intracystic bleeding. Other cystic lesions include congenital bile duct cysts and cystadenoma that have in common an inherent risk of malignant transformation.

Probably the most confusing benign liver tumors are focal nodular hyperplasia and hepatocellular adenoma (HCA). Whereas their management is entirely different, it can be very difficult to differentiate one for the other on imaging studies alone. Although new imaging techniques are currently under investigation to increase diagnostic accuracy, histological confirmation may still be required. Differentiating HCA from well-differentiated hepatocellular carcinoma is even more difficult, radiologically as well as on microscopical examination. Whereas focal nodular hyperplasia rarely gives rise to complications, HCA carries a risk of spontaneous intra-tumoral bleeding and malignant degeneration. Spontaneous bleeding in HCA with rupture into the abdominal cavity is a life-threatening complication of HCA. Its management has changed radically and the recommended first-line treatment nowadays is selective arterial em-

bolization which has proven effective in controlling bleeding and allows resection to be performed in an elective setting. The risk of developing hepatocellular carcinoma out of HCA is difficult to define in a 'normal' population allowing only estimates from analysis of the literature. Genetic subclassification of HCA opens up an exciting avenue to identify patients with an increased risk of malignant transformation. Insight into the natural history of HCA and adequate treatment requires consensus on the national and international level, enabling multicentric collaboration and long-term studies to be conducted.

Indications for surgical treatment are the diagnosis of pre-malignant lesions, such as a congenital bile duct cyst, cystadenoma or HCA. In most centers, resection of HCA is restricted to those lesions >5 cm. While the safety of liver resections for malignant tumors has improved over the past decade, this experience has translated into safer resections being undertaken for benign liver tumors as well. Resection of benign tumors can therefore be per-

formed with low morbidity and with a zero-mortality target as the obvious goal in centers with experience in liver surgery. One of the reasons for this is that benign lesions require less extensive resections since the width of the resection margin is less an issue than with malignant tumors. Many benign tumors can therefore be excised with minimal parenchymal resection or can even be enucleated. One should however not be mistaken that resection of large, centrally located tumors can be extremely challenging and the benefit of resection in these patients should be balanced with the possible surgical risks. The use of laparoscopic liver resections is particularly attractive in patients with benign liver tumors, but requires expertise in (open) liver surgery as well as laparoscopic procedures. On the other side of the therapeutic spectrum, liver transplantation has also been used as a treatment modality of last resort in exceptional situations.

We wish to express our gratitude to the speakers of this symposium for contributing a manuscript to this issue of *Digestive Surgery*.