Summary &Conclusion

The goals of the evaluation of a liver mass are to establish the diagnosis, to determine whether surgical treatment is warranted, and, if so, to judge resectability with an appropriate procedure. The diagnosis of a liver mass can often be achieved with knowledge of possible pathologies, a complete history and examination, and a logical cost-effective and efficient application of modern radiologic and laboratory tests [(37)].

The patient's age, medical history, and exposure history are particularly important. For example, a patient with a history of a colon resection for adenocarcinoma is clearly at risk for metastatic disease. Fever, weight loss, and malaise associated with right upper quadrant pain can be an indication of primary tumors or abscesses. Particularly relevant is a history of hepatitis, alcoholism, or hereditary or metabolic causes of cirrhosis, all of which are associated with an increased risk of malignancy and may affect later choices of major hepatic resection. Family history may reveal a hereditary polycystic disorder or an uncommon entity such as neurofibromatosis with its increased risk of hepatic sarcoma. A history of

exposure to hepatotoxins such as Thorotrast, arsenic, aflatoxin, or vinyl chloride should be explored. A history of hormone ingestion or possible hormonal excess is also important, given the relation between sex steroids and both hepatic adenoma and hepatocellular carcinoma (HCC). A history of human immunodeficiency virus infection or immunosuppression increases the likelihood of infectious masses as well as primary hepatic lymphoma. Physical examination should include an evaluation of the sequelae of hepatic dysfunction. A thorough physical examination, with careful evaluation of the skin, eyes, heart, colon, and rectum, may identify sources of primary tumor that have metastasized[(37)].

There are four roles for the radiologic evaluation of liver masses: screening of high-risk populations, such as patients with chronic hepatitis or patients before and after resection of colon cancer; detection of a suspected liver mass based on laboratory or physical examination; further diagnostic evaluation of a known mass; and, finally, preoperative or intraoperative evaluation of anatomy and resectability. Tests commonly used in the evaluation of hepatic masses include the following:

- ✓ **Dynamic computed tomography (CT) scan**
- ✓ **Magnetic resonance (MR) imaging**
- ✓ **Ultrasound**
- ✓ **Radionuclide studies (Tc82n sulfur colloid scan, tagged red blood cell scan)**
- ✓ **CT angiography**
- ✓ **Angiography**
- ✓ **Guided fine-needle aspiration or core needle biopsy**
- ✓ **Endoscopic retrograde cholangiopancreatography and percutaneous transhepatic chemangiography**

In the Western world, the tests most often used for screening, detection, and diagnosis are dynamic bolusenhanced CT, MR imaging, and ultrasound. CT and MR imaging have comparable sensitivities of about 90% and are often complementary in the evaluation of a mass. Ultrasound is only slightly less sensitive and is operator dependent, but it is a cost-effective procedure that adds useful information to the evaluation of a mass. The most sensitive tests for the detection of liver masses are CT angioportography (CTAP) and intraoperative ultrasound, the latter with a sensitivity of about 96% , they are generally reserved for preoperative or

intraoperative evaluation of resectability. Dynamic CT scanning remains the dominant imaging modality for routine screening and diagnosis because it is sensitive, is widely available, provides helpful anatomic information, and allows the evaluation of other intraabdominal structures and the detection of extrahepatic disease. CT scanning often yields qualitative information sufficient to make a diagnosis. For example, cavernous hemangiomas often have a characteristic enhancement pattern that obviates the need for angiography[37].

Hepatic MR imaging is evolving rapidly and has become a useful tool in the detection and diagnosis of liver lesions. It has a sensitivity equal to that of CT. Although anatomic resolution is lower, expense is greater, and availability is less than that of CT, MR with T1- and T2-weighted images with gadolinium enhancement can aid in the differential diagnosis of a mass. For example, MR imaging is now considered a test of choice for distinguishing hemangiomas from other mass lesions[37]. Transabdominal ultrasound remains extremely useful in the evaluation of liver masses and is often the initial imaging procedure performed. Intraoperative ultrasound ranks with CTAP in terms of sensitivity and is often considered the gold

standard in the evaluation of liver lesions. Additionally, intraoperative ultrasound can be used to guide surgical resections by clarifying the proximity of the portal and hepatic venous branches.

Radionuclide imaging is less sensitive and specific than CT, MR imaging, and ultrasound and has a high percentage of false-positive and false-negative results. They can help differentiate discrete masses[37].

Preoperative evaluation of a liver mass addresses specific surgical issues such as vascular and biliary anatomy and the detection of additional small lesions or significant vascular involvement that would render a patient unresectable. Tests used preoperatively include arteriography and CT arteriography (CTA) or CTAP. Arteriography, often performed in concert with CTAP, remains valuable as a preoperative study to define vascular anatomy. Arteriography is also helpful in detecting and defining small hypervascular lesions, such as HCCs, and endocrine metastases. Arteriography is less helpful in detecting hypovascular lesions such as colorectal metastases[37].

In the evaluation of any liver mass, percutaneous biopsy should be performed only if it can reasonably be expected to obviate the need for exploratory laparotomy. Most patients with symptomatic masses should be considered for laparotomy, thereby making preoperative histology superfluous. Biopsy of a suspected primary or metastatic malignancy with clinical indications of unresectability may spare the patient an unnecessary laparotomy. Laparoscopy with biopsy has been used to evaluate liver masses and to avoid laparotomy[(37)].