

Evidence Discussion (AB 42.1)

Liver Transplant, Pre-Transplant

Several large international working groups have drafted consensus guidelines on various occasions to standardize pre-liver transplant imaging, work-up, surveillance, diagnosis, and management of potential complications, including but not limited to hepatocellular carcinoma (HCC)

Prospective screening of patients at high risk for developing HCC increases the proportion diagnosed with potentially curable disease. Screening should focus on patients with F3 fibrosis, AIH with cirrhosis, cholestatic liver disease (PBC and PSC), MAFLD with cirrhosis, hemochromatosis, A1AT mutations, HCV that has progressed to cirrhosis, chronic HBV (with or without cirrhosis), and any cirrhotic disease, as over 40% of these patients will develop HCC.

The sensitivity of alpha-fetoprotein (AFP) decreases when a higher threshold is applied to improve specificity. AFP alone is insufficient as a screening test for HCC. At a commonly reported cut-off of 20 ng/mL, AFP has a sensitivity of 41-65% and a specificity of 80-94%, with a low positive predictive value of around 25% in high-risk patients.

Ultrasound (US) screening is superior to AFP assay for HCC detection. Combined AFP and US further increase detection rates. Therefore, combining AFP monitoring with US is recommended for patients with chronic HCV and HBV, as it has been found to reduce mortality by 37-41%.

Both the AASLD and APASL recommend measuring serum AFP levels combined with grey-scale US of the liver at 6-month intervals for HBV carriers and patients with chronic hepatitis. Meta-regression analysis shows a significantly higher sensitivity for early HCC with US every 6 months compared to annual surveillance. However, some transplant centres recommend surveillance every 4 months. The frequency of imaging is based on the average doubling time of HCC, estimated to be between 80 and 117 days.

Despite the higher sensitivity and specificity of CT and MRI for HCC detection, these methods have not been validated and are not currently recommended for initial baseline screening.

When a surveillance test is abnormal, the most reliable diagnostic tests are triple-phase helical CT and triple-phase, dynamic contrast-enhanced MRI, with the latter being slightly better for characterizing and diagnosing HCC. The hallmark of HCC on CT or MRI is arterial enhancement followed by delayed hypointensity of the tumor in the portal venous and delayed phases.

A negative biopsy does not completely rule out malignant disease; the nodule should be monitored at 3- to 6-month intervals until it disappears, enlarges, or shows diagnostic characteristics of HCC. Nodules smaller than 1 cm should be followed with ultrasound repeated at 3- to 6-month intervals.

In patients with HCC, the National Comprehensive Cancer Network (NCCN) recommends that HCC patients undergo chest CT scans every 3–6 months for the first two years, and then every 6–12 months after that.

For patients with suspected PSC, a 3D MRI/MRCP with T1-weighted and T2-weighted axial images and contrast enhancement should be obtained to evaluate for cholangiographic features of PSC, including intrahepatic and/or extrahepatic strictures alternating with normal or slightly dilated segments. Annual surveillance for cholangiocarcinoma (CCA) and gallbladder carcinoma should include abdominal imaging, preferably by MRI/MRCP with or without serum CA 19-9.

Other tests and cancer screenings should be performed as appropriate for transplant candidates, including age and risk factor-appropriate screenings like colonoscopy, mammography, Chest X-ray, CT

chest, etc. Transplant centres have specific protocols to evaluate the risk of malignancies, including breast and gynaecological cancers.

During the evaluation process, patients might require cardiac evaluation, CT coronary angiography, echocardiography, stress test imaging, lung scans, and bone densitometry, among other imaging tests, based on protocol and individual risks as recommended by AASLD.

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