Contrast-enhanced ultrasound shines in detecting liver metastases

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Contrast-enhanced ultrasound (CEUS) is far superior to conventional B-mode ultrasound studies and roughly as good as 64-slice CT for detection of liver metastases, according to a study from Italy presented at the ECR on Saturday.

"In our opinion, in the evaluation of patients with suspected metastases, a hepatic ultrasound exam must be performed only after contrast administration," said Dr. Vito Cantisani, a radiologist at the University of Rome La Sapienza.

Researchers put low mechanical index (MI) real-time CEUS, conventional B-mode ultrasound, and 64-slice CT to the hepatic detection test on 88 patients with suspected liver metastases from gastrointestinal tumors.

Real-time CEUS was performed at a very low MI after a bolus injection of 2.4 mL of Sonovue (0.04-0.10 to 25-35 kPa). Images were then reviewed by two blinded radiologists.

When it came to lesions sized from 0.5 to 4 cm, conventional ultrasound found 114, CEUS found 180, and spiral CT found 190. Conventional ultrasound had a sensitivity of 60%, compared with 95% for CEUS.

For lesions smaller than 1 mm, conventional ultrasound picked up 40, CEUS detected 80, and spiral CT found 90. The difference in sensitivity was even greater for the smaller sized lesions:

Conventional studies had a sensitivity of just 44.6% compared with 98% for CEUS.

CEUS picked up some lesions missed by spiral CT, and vice versa. While the overall number of lesions detected by CT was higher, patient management was not affected. The difference between CEUS and spiral CT was not statistically significant, and ultrasound is more cost-effective, Cantisani said.

Surgeons at Cantisani's institution are impressed when they see the capabilities of CEUS firsthand. They gain greater faith in the reliability of the study for following patients after surgery.

"After seeing our images and comparing CEUS with spiral CT, they are now confident," he said.

In another study presented at the same session, researchers at Frankfurt University Hospital assessed liver regeneration following liver surgery, laser-induced thermotherapy (LITT), and transarterial chemoembolization (TACE).

They used CT and MRI to determine how therapy was affecting liver parenchyma and the extent of liver regeneration. Patients were tracked for 12 months, during which time two regeneration indicators were monitored and recorded: tumor necrosis factor-alpha (TNF-a) and hepatocyte growth factor (HGF).

Following LITT and TACE, liver regeneration is stimulated, and this change is reflected in a big boost of cytokine HGF but little change in TNF-a, according to Dr. Thomas Lehnert, a professor of radiology at Frankfurt. Liver changes typically become evident from six to 12 months postprocedure.

The study implies the usefulness of monitoring laboratory data in patients after interventional procedures in the liver.

"Right now, we just have study data. But our data show HGF has such an important role for the future of liver regeneration. There is a strong correlation with HGF and regeneration," Lehnert said.

Disclosures:

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