Contrast-enhanced ultrasound (CEUS) has excellent diagnostic accuracy in differentiating focal liver lesions: results from a Swiss tertiary gastroenterological centre

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INTRODUCTION
Focal liver lesions (FLLs) are common on conventional ultrasound. Contrast-enhanced ultrasound (CEUS) is highly accurate for differentiating between benign and malignant FLLs, with an accuracy comparable to that of contrast-enhanced CT and contrast-enhanced MRI. Notably, there is no evidence supporting the routine use of CEUS for evaluating benign and malignant FLLs in Switzerland. In this study, we assessed the use of CEUS in a clinical routine setting in a tertiary Swiss gastroenterology centre.

METHODS
We analysed all CEUS investigations performed on new or unclear FLLs in our department between November 2011 and March 2013. In all patients, the CEUS results (benign versus malignant FLLs) were compared with CT or MRI findings. To avoid interobserver variation, CEUS was performed by a single experienced gastroenterologist using one ultrasound device (Acuson Sequoia 512®, Siemens, Erlangen, Germany). All patients were examined using the intravenous application of 1.5–2 ml Sonovue®. An FLL with arterial enhancement with wash-out in any vascular phase was defined as a malignant FLL. Malignant FLLs were confirmed by histology.

RESULTS
The study included 112 patients. None of them experienced side effects after injection of Sonovue®. The final diagnoses included malignant FLLs (n = 37) and benign FLLs (n = 75) that ranged in size from 7 to 120 mm. The biopsy-proven malignant FLLs (n = 37) included hepatocellular carcinoma, metastatic cancers, peripheral cholangiocarcinoma and primary B-cell lymphoma. CEUS correctly identified 36 out of 37 malignant FLLs, showing a sensitivity of 96–97.2% and a negative predictive value (NPV) of 94.1–98.5%. In contrast, CT/MRI did not identify three metastatic cancers, one HCC, one peripheral cholangiocarcinoma and one primary lymphoma in the liver as malignant FLLs, resulting in a sensitivity of 80.6–80.9% and an NPV of 78.9–89.8%. All these malignant FLLs were correctly classified by CEUS.
CONCLUSIONS
In daily clinical practice, CEUS is a fast imaging tool which uses a renal-independent contrast agent and shows excellent accuracy for differentiating between malignant and benign FLLs in about five minutes. The use of CEUS helps to avoid false negative results from CT/MRI and improves sensitivity. CEUS should be the first diagnostic step for investigating new or unclear FLLs.