Role of Second Generation Ultrasound Contrast Agent SonoVue in the Assessment of Focal Liver Lesions

Thesis

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Abstract

Characterisation of a focal liver lesion requires the assessment of morphological characteristics as well as the vascularity and enhancement patterns within the lesion. Therefore, the administration of a contrast agent, demonstrating the intratumoural vascularity and blood flow, gives essential information for the characterisation of focal liver lesions

AIM: The aim of this study was to assess the role of contrast enhanced ultrasound (CEUS) using SonoVue for the characterisation of solid hepatic focal lesions.

METHODS: This prospective study was conducted on 100 patients with hepatic focal lesions. CEUS using SonoVue, in addition to triphasic CT abdomen and/or dynamic MRI were done to all patients.

RESULTS: In the differentiation between benign and malignant hepatic focal lesions; the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy of CEUS using SonoVue was 87.8%, 97%, 98.5%, 78.1% and 90.7% respectively, and for CT and/or MRI it was 90.5%, 90.9%, 95.7%, 81.1%, 90.7% respectively. There was no statistically significant difference between CEUS and CT and/or MRI in the characterisation of hepatic focal lesions ($p>0.05$).

CONCLUSION: CEUS using SonoVue is comparable to CT and/or MRI in the characterisation of hepatic focal lesions

Key words:

- Contrast enhanced ultrasound
- SonoVue
- Hepatic focal lesions

List of Abbreviations

AASLD	American Association for the Study of Liver Diseases
AFP	Alpha-feto protein
ALP	Alkaline phosphatase
ALT	Alanine transaminase
APASL	Asian Pacific Association for the Study of the Liver
AST	Aspartate transaminase
BCLC	Barcelona Clinic Liver Cancer
CA 19-9	Carbohydrate antigen 19-9
c Ab	Core antibody
CECT	Contrast enhanced computed tomography
CEEUS	Contrast enhanced endoscopic ultrasound
CEMRI	Contrast enhanced magnetic resonance imaging
CEUS	Contrast enhanced ultrasound
CLD	Chronic Liver Disease
Cm	Centimetre
EFSUMB	European Federation of Societies for Ultrasound in Medicine and Biology
ELISA	Enzyme linked immunosorbent assay
FDA	Food and Drug Administration
FDG	18F-fluoro-2-deoxyglucose
FNH	Focal nodular hyperplasia
HBV	Hepatitis B Virus

HCC	Hepatocelluar carcinoma
HCV	Hepatitis C virus
HNF	Hepatocyte nuclear factor
ICC	Intrahepatic cholangiocarcinoma
INR	International normalising ratio
JSH	Japanese Society of Hepatology
MDCT	Multidetector CT
MI	Mechanical index
NRH	Nodular regenerative hyperplasia
PEI	Percutaneous ethanol injection
PET	Positron emission tomography
PVT	Portal vein thrombosis
RECIST	Response evaluation criteria in solid tumours
RFA	Radiofrequency ablation
sAg	Surface antigen
SD	Standard deviation
SPECT	Single photon emission computed tomography
TACE	Transarterial chemoembolisation
TARE	Transarterial radioembolisation
Tc	Technetium
UCA	Ultrasound contrast agent
US	Ultrasound
WFUMB	World Federation for Ultrasound in Medicine and Biology

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