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Role of diffusion-weighted imaging and apparent diffusion coefficient in the differentiation of hepatocellular carcinoma from dysplastic nodules in the cirrhotic liver on magnetic resonance imaging

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Differentiation of hepatocellular carcinoma (HCC) from dysplastic nodules (DNs) in cirrhotic patients is crucial for their management, especially in the selection of candidates for liver transplantation. Among all radiological techniques, magnetic resonance imaging (MRI) is considered to be the one with the highest accuracy in diagnosing HCC. Hepatobiliary contrast agents allow the investigation of functional alterations of hepatocytes on delayed phase imaging (DPI), improving the detection and the characterization of small nodules. Diffusion-weighted imaging (DWI) is a functional MRI sequence that has gained interest in liver imaging, because it enables non-invasive characterization of biological tissues based on the diffusion properties of water molecules. There are several discrepancies in literature about the utility of DWI and ADC measurements in diagnosing HCC. The aim of this study is to investigate the utility of both qualitative DWI and quantitative ADC findings of pathology-proven nodules for the differentiation of HCC from DN in the cirrhotic liver. Furthermore, the correlation between DWI and DPI is examined. DWI and ADC seem to be useful in differentiating HCCs and DN in the cirrhotic liver. As there is overlap, they should not be considered as a stand-alone procedure; hyperintensity on DWI and low ADC values should raise the suspicion of HCC, particularly in association with hypointensity on DPI. In the next future, DWI and ADC might become a standardized diagnostic parameter to distinguish malignant lesions from benign hepatocellular nodules in cirrhotic liver.

Biography

Riccardo Inchingolo has completed his degree at the age of 24 years at Catholic University in Rome and has done his training in Radiology both in Rome and in London (King's College Hospital and St. Thomas' Hospital). He is a Consultant Diagnostic and Interventional Radiologist at Gemelli University Hospital. He has published almost 10 papers in reputed journals with IF about liver disease.

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