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Abdominal Imaging

Feature section, under the guest editorship of D. G. Mitchell

MR imaging of cirrhosis and its complications

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The liver has been a challenging organ to image because of its complex anatomy and blood supply, its variety of functions, and the diversity of diseases that afflict it. The challenge of imaging the liver increases when the liver is affected by cirrhosis. Abdominal vascular anatomy and physiology are altered by the development of portal hypertension. Masses such as hepatocellular carcinoma can be difficult to recognize because cirrhosis distorts the shape of the liver. If a mass or nodule is detected in a cirrhotic liver, the distinction between benign and malignant causes has proven difficult. Managing patients with cirrhosis has been difficult because of the increased operative morbidity of these patients and the complex nature of one of its most important complications, hepatocellular carcinoma.

This feature section includes articles written by three gifted young investigators. Two of them have recently spent time at my institution, conducting much of their research on elucidating the potential contributions of magnetic resonance imaging toward understanding cirrhosis and facilitating management of these patients.

When interpreting imaging studies in patients suspected of having liver disease, the first task is often deciding whether cirrhosis is present. Whereas advanced cirrhosis is usually easy to recognize, early cases may elude diagnosis. Dr. Ito discusses the morphology of cirrhosis, including established and more recent observations.

One of the most clinically significant complications of cirrhosis is the development of portal hypertension. As portal pressure increases, various portosystemic collaterals develop, the understanding of which can facilitate interpreting these imaging studies. Dr. Kim vividly describes and illustrates these various anomalous pathways.

Another serious complication of cirrhosis is the development of hepatocellular carcinoma. Dr. Krinski and Dr. Lee take advantage of the precise radiologic–pathologic correlation that has been conducted at their institutions to discuss the various nodules that are found in cirrhotic livers, including recently revised terminology. By understanding the transition between benign through dysplastic to malignant nodules, one can more easily make sense of the complex nodularity depicted in cirrhotic livers on multiple pulse sequences.

It has been my pleasure to bring together these three valuable articles regarding new concepts imaging cirrhosis. After reading them, the cirrhotic liver should present less mystery to radiologists.