

Body MRI – educational course

MR Cholangiography – from 2D to 4D imaging

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TARGET AUDIENCE – Radiologists with an interest in abdominal MRI

Highlights

- MR cholangiography is the primary imaging modality to evaluate the biliary ductal system non-invasively.
- MR cholangiography should be performed if an interventional procedure is unlikely.
- MR cholangiography using biliary excreted gadolinium based contrast agents adds a functional flavor to biliary MRI.

Current imaging techniques for evaluation of the biliary system include ultrasound, MRI, cholescintigraphy, and endoscopic retrograde cholangiopancreatography [ERCP]. Over the past 20 years, MR cholangiography [MRC] has been established as a highly sensitive method for the assessment of the entire hepatobiliary system using heavily T2-weighted fat suppressed sequences. Currently, MRC is recommended if an interventional procedure is unlikely; subsequently, MRC has widely replaced ERCP as a purely 'diagnostic' imaging modality. However, a few problems remain with the most important (and still unmet) need being the lack of functional or dynamic information. This disadvantage (when compared to ERCP) makes it oftentimes impossible for the radiologist

- to assess the communication of fluid collections with the biliary ductal system e.g. a fluid collection in close proximity to the biliary system [1-3]
- to assess biliary flow dynamics e.g. the relevance of an anatomic narrowing e.g. within the common bile duct, or the Sphincter of Oddi complex and the choledochoduodenal junction.

The capability of hepatobiliary MRI has further increased with the availability of hepatobiliary-specific gadolinium-based MRI contrast agents [gadoteric acid, gadobenate], which are taken up by hepatocytes and in part excreted through the biliary system within 10 – 120 minutes post injection (delayed or hepatobiliary phase). While primarily developed for improving detection and characterization of focal liver lesions, the hepatobiliary phase can also be used to acquire a T1 weighted MRC similar to a Gadolinium enhanced T1 weighted MR angiography. In this lecture, the audience will learn

- how to acquire T1 weighted MR cholangiograms [4-6]
- how to optimize pulse sequence parameters for T1 weighted MR cholangiograms
- how to interpret T1 weighted MR cholangiograms

This case based lecture will cover a range of biliary pathologies with a focus on the presumed benefit of T1 weighted MRC. Finally, the additional value of T1 weighted MR cholangiograms supplementing a standard liver MR examination in the assessment of biliary ductal obstruction will be determined, and an overview of the current literature will be provided [7-10].

References

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