

Review: Magnetic resonance cholangiopancreatography is accurate for diagnosing biliary disease

Romagnuolo J, Bardou M, Rahme E, et al. **Magnetic resonance cholangiopancreatography: a meta-analysis of test performance in suspected biliary disease.** *Ann Intern Med.* 2003;139:547-57

QUESTION

What is the accuracy of magnetic resonance cholangiopancreatography (MRCP) for diagnosing the presence of biliary disease (biliary obstruction, stones, and cancer)?

DATA SOURCES

Studies in English or French were identified by searching MEDLINE (January 1987 to March 2003), scanning bibliographies of relevant studies, and contacting experts.

STUDY SELECTION AND ASSESSMENT

Studies were selected if they provided sufficient information to construct 2 × 2 contingency tables of MRCP results by disease status and if MRCP was compared with a reasonable single or composite gold standard. Acceptable single gold standards were endoscopic retrograde cholangiopancreatography (ERCP); endoscopic ultrasonography (EUS); intraoperative, intravenous, or percutaneous transhepatic cholangiography; and surgical exploration. Acceptable composite gold standards were also allowed. Exclusion criteria included studies of patients with a particular diagnosis who were having MRCP and stud-

ies in which only patients with positive results on MRCP had other techniques done to confirm diagnosis. Studies were assessed for quality.

OUTCOMES

Sensitivity, specificity, and likelihood ratios of MRCP for diagnosing biliary obstruction, stones, and cancer.

MAIN RESULTS

67 studies (4711 patients) met the selection criteria. 61% of studies were blinded, 59% had consecutive enrollment, 92% had some type of gold standard test done in all patients, and 30% used the same gold standard in all

patients. Test characteristics of MRCP for diagnosing the presence or level of biliary obstruction, or the presence of stones or cancer are in the Table.

CONCLUSION

Magnetic resonance cholangiopancreatography is accurate for diagnosing the presence and level of biliary obstruction, and is slightly less accurate for diagnosing bile duct stones and cancer.

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Test characteristics of magnetic resonance cholangiopancreatography for diagnosing biliary disease*

Imaging endpoints	Number of studies (Number of patients)	Weighted sensitivity	Weighted specificity	+LR	-LR
Presence of obstruction	30 (1954)	97%	98%	49	0.03
Level of obstruction†	8 (572)	98%	98%	49	0.02
Detection of stones	46 (3592)	92%	97%	29	0.08
Detection of cancer	22 (1294)	88%	95%	16	0.13
Overall (4 endpoints combined)	67 (4711)	95%	97%	32	0.05

*Diagnostic terms defined in Glossary; -LRs calculated from data in article.

†Hilar or intrahepatic disease (or intrahepatic extension).

COMMENTARY

MRCP has evolved into 1 of the best noninvasive imaging tools of the intra- and extrahepatic biliary system. Although many clinicians feel that the gold standard for choledocholithiasis remains ERCP, which has an excellent detection rate of stones and strictures, the recent National Institutes of Health consensus conference on ERCP concluded that MRCP, ERCP, and EUS all had similar sensitivity and specificity for diagnosis of common bile duct stones (1). However, ERCP is potentially more operator-dependent and, as an invasive procedure, has greater risks associated with conscious sedation and pancreatitis. EUS reliably detects common bile duct stones, has accuracy similar to that of ERCP, and has a lower risk for pancreatitis, but it remains more invasive than MRCP and requires conscious sedation. MRCP may be superior to ERCP and EUS in assessment of the proximal extrahepatic bile duct and hilum and may be especially valuable in planning surgery because the avoidance of contrast injection (as is required during ERCP) may diminish the risk for iatrogenic infection.

It may be difficult to establish the cause of bile duct strictures with any of the 3 methods without doing tissue sampling, which can be achieved by fine-needle aspiration during ERCP or EUS, or by intraductal biopsy or brushing cytology during ERCP. This is reflected in the reported MRCP sensitivity of only 88% for malignant strictures in the meta-analysis by Romagnuolo and colleagues.

It is our opinion that ERCP remains the preferred technique for management of patients with known biliary obstruction or cancer because of the ability to perform therapeutic intervention during the

procedure, especially in patients with cancer who are deemed not to be candidates for surgical resection.

The future role of MRCP will likely be to “rule out” bile duct disease or obstruction in patients with a low clinical suspicion of obstruction and, rarely, to plan surgical intervention. Thus, diagnostic use of MRCP, in our opinion, will likely be driven by the sensitivity and negative predictive value of this procedure. As intrahepatic duct resolution and depiction improves, MRCP may become the preferred technique to establish the diagnosis of primary sclerosing cholangitis, a chronic inflammatory and fibrosing condition of the intra- and extrahepatic bile ducts, which is currently diagnosed only by ERCP, with a small risk for inducing biliary sepsis via contrast in nondraining segments.

Finally, it is important to emphasize that all of the biliary imaging methods discussed here are institution- and operator-dependent, and local facilities and expertise will dictate the choice of these techniques and the sequence with which they are used.

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Reference

1. NIH state-of-the science statement on endoscopic retrograde cholangiopancreatography (ERCP) for diagnosis and therapy. NIH Consens State Sci Statements. 2002 Jan 14-16;19:1-26.