Role of MRI and Advanced Endoscopic Techniques in PSC

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2012 Annual Conference
PSC Partners Seeking a Cure
May 5, 2012
Techniques

- MRCP
- MR Elastography
- ERCP
  - Cholangioscopy
  - Intraductal US
- EUS
Magnetic Resonance Imaging

- Uses magnetic principles for visual representation of tissue
- No exposure to ionizing radiation
- MRCP began in 1990’s
- Can be done without IV contrast
Comparison of ERC and MRC in PSC

Pruning
Performance of MRCP in the Diagnosis of PSC

- Six investigations with 185 PSC subjects
- Sensitivity and specificity for PSC detection was 86% and 94% across all studies
- In patients with a high likelihood of PSC, MRCP was (+) in those with PSC
- In patients with a low likelihood, MRCP was (-) in those without PSC

Dave M et al. Radiology 2010;256:387-396
MRCP is Cost Effective for Diagnosis of PSC

- 73 patients
- Trial of MRCP vs ERCP
- Adjusted for ERCP after negative MRC study
- Cost of ERCP-related complications > $2900 per diagnosis
- Cost saving with MRCP

Advances in MRCP and Image Acquisition for PSC
MR Elastography

Acoustic waves at 60Hz

Imaging time: 32s

Displacement (µm)

Shear Stiffness (kPa)

Elastogram

Active Driver

Passive Driver
Liver Fibrosis

Biopsy:
Stage F1
2.1 kPa

Biopsy:
Stage F2
3.5 kPa

Biopsy:
Stage F3
4.8 kPa

Biopsy:
Stage F4
10.8 kPa

Normal
ERCP
Classic Case of PSC

Multifocal stricturing

Upstream dilation
Management of Biliary Stricture

- Cholangitis, pruritus, pain
- Dilatation alone with response adequate for dominant strictures
- If stenting required, removal +/- replacement in 4-6 weeks preferred
- Post-procedures antibiotics
- Post-ERCP pancreatitis 1-5%
Cholangioscopy

- Advent in mid-1970’s
- Vast improvements by 2000
- Single vs dual operators
  - Spyglass (single)
- Some with NBI capability
- Primary use for treating difficult bile duct stones and assessing biliary strictures

Parsi MA. WJG 2011 Jan 7;17(1):1-6
Potential Role for Cholangioscopy in PSC

- High sensitivity for detection of malignant lesions are reported yet definitions are lax.
  - Often achieved at the cost of lower specificity

- Value of targeted biopsy under direct visualization remains uncertain
  - Well-designed studies are needed

Parsi MA. WJG 2011 Jan 7;17(1):1-6
Intraductal Ultrasound

- 86 patients with indeterminate biliary strictures (n=34)
- Negative cytology and histology in 21 pts
- Accuracy of IDUS was 86% overall
- Accuracy of IDUS was 89% in PSC

Domagk D et al, Gut 2002  
Levy M et al, AJG 2008
Endoscopic Ultrasound (EUS)

- First introduced into clinical practice in 1980
- Radial and linear echoendoscopes
  - Linear for FNA
- Main uses for pancreatic disease, submucosal lesions, staging of GO malignancy, and biliary tract eval

Common bile duct calculus (arrowed) casting an acoustic shadow
Role of EUS in PSC

- Exclude choledocholithiasis
  - Esp. if imaging is inconclusive
- Evaluate unexplained lymph nodes
  - Typically benign in PSC
- Staging of CCA
  - FNA of lymph node
  - Exclude vascular involvement
- **Needle aspiration of stricture to rule out CCA is not recommended**
--- Thank you! ---