MRI of the Gastrointestinal Tract: Crohn’s Disease

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Gastrointestinal Tract MRI

- Can be performed using standard abdominal imaging sequences
- Highly sensitive and specific for active inflammation
  - IBD
  - *-itis
  - Acute abdomen-pelvis
MRI Bowel

**Methodology Take-Home Points**

- IBD – Method of choice (in centers w experience)
- Most important images
  - SST2 -/+FS
  - 3D GRE Gad
  - TFISP
**T2-Weighted Imaging**

- Single Shot (HASTE, SSFSE, sSH)
- Optimization
  - Parallel Processing with surface coils (iPAT, ASSET, SENSE)
  - SPAIR fat suppression

*Gastroenterology* 2007;133:385-90  
*JMRI* 2008;28:113-40  
*JMRI* 2008;27:1448-54
2-Monitor Layout:

- CorT2
- CorT2FS
- AxT2
- AxT2FS
- SagT2
- HiResT2
- Cor 3D gre
- Pre
- Arterial
- Venous
- Delayed
- Cor-Del

SPAIR-T2 single shot - JMRI 2008;27(6):1448-54
Crohn’s Disease – Five Pillars of Diagnostics

TFISP

Gastroenterology 2007;133:385-90
JMRI 2008;28(5):113-40
Crohn’s Disease - 1

- Scope, Capsule and Biopsy Sensitivity
  - Mucosal and only mucosal disease
Crohn’s Disease - 2

- MRI Sensitivity
  - Mostly submucosa and deeper disease
Crohn’s Disease - 3

- Submucosal and deeper disease
  - Most serious symptoms
  - Most significant impact on medical therapy
  - Most significant impact on surgical therapy
Crohn’s Disease - 4

- Mucosa can heal over deeper disease and scope evaluation may under-represent disease extent
Crohn’s Disease - 5

- Differentiations between CT and MR
  - Xrays vs. no-xrays
  - Contracted bowel vs. disease
  - Inflammation vs. fibrosis
Crohn’s Disease - Fibrosis
Crohn’s Disease - Inflammation
Crohn’s Disease
Crohn’s Disease
Crohn’s Disease
Crohn’s Disease - Treated
Crohn’s Disease
Crohn’s Disease - Fistula

- True FISP
Intractable RLQ Pain
Gastrointestinal Tract MRI

- Summary – IBD – Crohn’s Disease
  1. Inflammation – Fat Sat Single shot T2 SPAIR is vital
  2. Fibrosis – Delayed Gd uptake but no inflammation (no increased signal on Fat Sat T2)
  3. Scope will not assess submucosa seen on MRI
  4. Most symptomatic (treated) disease relates to submucosa
  5. MR favored over CT for assessing inflammation vs fibrosis and for assessing non-distended bowel, complications (abscess/fistula), and serial studies
Thank You For Your Attention!!

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