“Body MRI - Optimize your clinical practice”

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How to Run a Successful Body MRI Practice

I. Hardware

High field super conducting MR scanners are commercially available with field strengths of 1.5T or. 3T. Excellent body MR imaging can be achieved at either field strength. The advantages of improved SNR at 3T were initially tempered by artifacts which have for the most part been overcome. My advice, learn to get the most out of whatever scanner you have available for body MRI.

Phased array surface coils are now readily available and are an essential element of making beautiful images for body MR. Ideally a surface coil should provide coverage of at least the abdomen and pelvis or >50 cm in the cranio-caudal direction. This will allow for multi station imaging without having to reposition the surface coil.

Power Injectors allow for rapid and reproducible injection of IV contrast and should be routinely used. This is particularly true of all dynamic contrast enhanced studies including exams of the liver, pancreas, prostate, and breast.

Patient safety and monitoring is a topic unto itself.

II. An Approach

Efficient Body MRI is can be comprehensive and fast. Breath-hold pre and post contrast imaging facilitate rapid imaging that can generate hundreds of images in just a short breath-hold. A comprehensive liver MRI including MR Elastography, fat and iron quantification, pre contrast T1, T2, DWI and dynamic post contrast imaging requires less than 15 minutes to complete. The complete abdominal and pelvic MR exam should take less than 30 minutes from the first to the last san.

30 min Abdomen & Pelvis exam

III. MR Technologist training and retention. MR technologist training and retention is essential for a successful body MR practice.

IV. Exams to Offer – Beyond Bread and Butter

A. Gastrointestinal MRI is a specialized portion of body MR that evaluates the stomach, small intestine, and colon for inflammation or malignancy. MR enterography uses intraluminal GI contrast material combined with IV contrast administration.

Rectal Cancer staging can be accomplished with phased array surface coils or an endorectal coil. We use thin section high resolution T2-weighted imaging angled perpendicular and parallel to the rectal mass
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Bowel obstruction can be assed with MR to distinguish benign from malignant causes of bowel obstruction. In the setting of bowel obstruction no intraluminal contrast needs to be administered since the obstructed bowel is already distended with fluid.

B. Cancer Imaging

Whole Body Diffusion
Peritoneal cancer imaging
Finding the subtle tumors that PET and CT miss

C. Liver imaging

MRE or MR Elastography uses MR to measure liver stiffness that predicts degrees of liver fibrosis seen at liver biopsy. As a non invasive technique it can detect liver disease that is routinely missed on CT, ultrasound, and routine MRI. MRE requires hardware and software that can add a new tool for your clinicians and new business for your practice.

Fat and Iron quantification detects and quantifies diffuse liver disease characterized by the abnormal accumulation of fat and or iron in the liver. Elegant new pulse sequences allow us to accurately determine liver fat and iron content in a single breath hold.

D. Acute Abdominal Pain – ER referrals can generate many new body exams to evaluate abdominal and pelvic pain. Body MR combined with MRCP can quickly assess the gallbladder, bile ducts, liver, kidneys, and GI tract with great accuracy. Acute appendicitis is easily detected with diffusion-weighted imaging and post gadolinium, fat suppressed MRI. These exams and their interpretations must be performed efficiently to compete with CT in the acute ER setting.

E. DCE – dynamic contrast enhanced MRI looks at how tissues enhance with gadolinium, It evaluates capillary permeability or leakiness which be increased in tumors and inflammation. In DCE we image rapidly and

repeatedly over the tissue interest for several minutes generating many sets of post contrast images. The data set is processed to show tumors and inflammation. DCE is particularly useful for MRI of the prostate cancer, rectal cancer, other tumors, and inflammation. DCE is very effective in evaluating tumor response to therapy often showing changes in tumor permeability before there is any change in tumor size.

F. Finding the next great MR application and pulse sequence.
Brainstorming with your referring clinicians and surgeons helps you to understand their clinical questions and needs. Directing your MR skills at their clinical problems will keep your practice fresh, fun, and busy. Incorporate new ideas, pulse sequences into your protocols on a regular basis. A good body MR imaging practice is never complacent and body MRI is never boring.

V. Maintaining Exam Quality

Our goal is to make gorgeous images with body MR. To accomplish this you must be intimately familiar with your protocols and pulse sequence parameters. Do not leave it to your MR technologists to determine the correct parameters. Once you have the perfect protocol you must monitor image quality and protocols constantly. Provide your MR technologists feedback for good and bad exams.

VI. Practice Building

Your personal relationship with clinicians and surgeons is essential to promote and maintain the role of body MRI in their practices. Communication of the results by phone, email, text, or personal contact will generate more referrals.

Marketing new and existing body MR techniques educates your referring physicians about the power of body MR. We accomplish this by word of mouth, mailers, and office visits.

VII. Finally, a successful body MR practice begins and ends with an attitude……Have fun! In the words of my mentor Bob Herfkens, “Go Play!”