Multiparametric Kidney MRI for Renal Tumor Evaluation

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1. Renal cell carcinoma
1.1. Kidney cancer : 10th most common cancers
1.2. Renal cell carcinoma (RCC) : 85% of kidney cancers
1.3. M : F = 1.7 : 1
1.4. Surgically proven benignity : 10-20%
1.5. Therefore, biopsy is recommended for indeterminate lesions

2. Common benign tumors in the kidney
2.1. Western : Oncocytoma > AML
2.2. Eastern (Korea, Japan, China) : AML > Oncocytoma

3. Radiologic examination for renal lesions (AUA guideline)
3.1. For solid or complex cystic masses
3.2. High-quality, multiphase, cross-sectional abdominal imaging (CT or MRI)

4. Role of cross-sectional imaging (EAU guideline)

4.1. CT (primary imaging tool)
4.1.1. Primary tumor extension
4.1.2. Venous involvement
4.1.3. Enlargement of regional LNs
4.1.4. Condition of adrenal glands and other solid organs
4.1.5. Function and morphology of contralateral kidney

4.2. MRI (problem-solving tool)
4.2.1. Enhancement in renal masses
4.2.2. Extent of IVC tumor thrombus which was poorly defined on CT
4.2.3. CT or MRI allow accurate diagnosis of RCC, but cannot reliably distinguish oncocytoma and fat-free AML from malignant renal neoplasm

Based on the above background, we will discuss the diagnostic role and limitation of multiparametric MRI and its pulse sequences to evaluate renal tumors with representative cases.

Keywords: MRI, Kidney, Renal, Tumor, Mass
GU MRI Symposium: Recent issues in Genitourinary MRI Session 2) Prostate Imaging

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In the year of 2012, American Urological Association (AUA) discouraged routine prostate specific antigen (PSA) screening in the normal population, and overtreatment in patients with clinically insignificant cancer became an important clinical issue. Even if a prostate cancer is detected, the differentiation between clinically significant and insignificant cancer is crucial in decision making of treatment. Traditionally, systematic randomized biopsy remains the standard diagnosis of choice in prostate cancer, under or oversampling can mislead the results. Multiparametric MRI can detect, characterize and differentiate prostate cancer. Moreover, either in-bore MRI guided or MRI-Ultrasound fusion biopsy is gaining its ground over systematic random biopsy. Both AUA and ACR (American College of Roentgenology) had announced that MRI guided biopsy is superior to random biopsy in patients with previous negative biopsy history for the detection of clinically significant cancer. Still it does not replace the systematic randomized biopsy in biopsy-naïve patient, it is generally believed that this technique can increase the detection of clinically significant cancer, and also decrease the detection of clinically nonsignificant cancer.

Previously, interpretation of prostate MRI had excessive variation in the performance, interpretation, and reporting. However, introduction of PIRADS (Prostate Imaging Reporting and Data System) version 2 set up the reliable, reproducible MR imaging guideline about clinically significant prostate cancer. Many reports and metaanalyses are validating its efficacy and accuracy for the detection of clinically significant cancer. Therefore, now multiparametric prostate MRI is regarded as a key imaging modality in the pretreatment evaluation of prostate cancer. Role of MRI has expanded that now cancer staging, surgical planning, posttreatment follow-up, active surveillance are included for the indication of prostate MRI. PET/MR scan with newer radiopharmaceutical

**Keywords**: tate, PIRADS, PSA