Redefining MRI:
From Image to Insight

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KSMRM Educational Course 2

교육세션 2-2

Bladder MRI: Essentials for VI-RADS Interpretation

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Assessment of muscle invasion is a key role of imaging in bladder cancer, as the distinction between non–muscle-invasive and muscle-invasive disease directly influences treatment strategy. Multiparametric MRI, particularly through the Vesical Imaging-Reporting and Data System (VI-RADS), provides a standardized approach for estimating the likelihood of muscularis propria invasion.

This lecture will review the essential concepts of bladder MRI with a focus on practical VI-RADS interpretation. The clinical role of bladder MRI and key technical considerations, including bladder distension and the use of T2-weighted imaging, diffusion-weighted imaging, and dynamic contrast-enhanced imaging, will be discussed. Emphasis will be placed on how each sequence contributes to VI-RADS assessment: T2-weighted imaging for tumor morphology and tumor–bladder wall interface, diffusion-weighted imaging as the primary functional sequence for evaluating muscle invasion, and dynamic contrast-enhanced imaging as a complementary sequence.

Representative cases will illustrate VI-RADS categories and common interpretive challenges, including post-procedural change, inflammatory wall thickening, small or stalked tumors, and discordant findings among sequences. Current evidence, limitations of VI-RADS, the potential role of biparametric MRI, and emerging applications in treatment response assessment will also be briefly addressed.

The goal of this lecture is to provide a practical framework for structured bladder MRI interpretation and clear communication of muscle invasion risk in clinical practice.

Keywords: *Urinary bladder neoplasms, Magnetic resonance imaging, Neoplasm staging, Diffusion magnetic resonance imaging, VI-RADS*