

Functional Renal Imaging: New Trends in Radiology

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Abstract

The objective of this work is to compare the characteristics of various techniques for functional renal imaging, with a focus on nuclear medicine and magnetic resonance imaging. Even with low spatial resolution and rather poor signal-to-noise ratio, classical nuclear medicine has the advantage of linearity and good sensitivity. It remains the gold standard technique for renal relative functional assessment. Technetium-99m (99mTc)-labeled diethylenetriamine penta-acetate remains the reference glomerular tracer. Tubular tracers have been improved: ¹²³I- or ¹³¹I-hippuran, 99mTc-MAG3 and, recently, 99mTc-nitritriacetic acid. However, advancement in molecular imaging has not produced a groundbreaking tracer. Renal magnetic resonance imaging with classical gadolinated tracers probably has potential in this domain but has a lack of linearity and, therefore, its value still needs evaluation. Moreover, the advent of nephrogenic systemic fibrosis has delayed its expansion. Other developments, such as diffusion or blood oxygen level-dependent imaging, may have a role in the future. The other modalities have a limited role in clinical practice for functional renal imaging

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Biography

As Associate Chief Medical Officer, Mallika Mendu, MD, MBA is responsible for the transformation of care delivery at BWH to ensure the implementation of strategic priorities related to inpatient operations, care continuum management and population health. She is also responsible for ensuring that quality, safety, access, patient and family experience and efficiency can be met along the continuum of care. Dr. Mendu leads efforts related to medical affairs, clinical integration, care management, physician coaching, and advancing postgraduate training. She previously held leadership roles in the Brigham Department of Quality and Safety and MGB Population Health Management.

Dr. Mendu completed her internal medicine residency at the BWH, her nephrology training at the BWH and MGH, and her MD and MBA degrees at the Yale School of Medicine and the Yale School of Management, respectively. She received her Bachelor's in Science from Brown University. She serves in the Department of Medicine, Renal Division, as a practicing nephrologist, clinical researcher, and assistant professor, and conducts research related to quality, population health, equity and care delivery innovation. She has authored over 70 peer-reviewed publications and provides mentorship to trainees conducting research in health care delivery innovation.