Renal Relevant Radiology: Introduction

Sarah Faubel

Radiologic tests are an integral part of the work up and management of patients with kidney diseases. Unfortunately, most nephrologists are not specifically trained in the basis of these tests. Thus, a clear understanding of the use, interpretation, and appropriateness of many radiologic tests may be lacking. Furthermore, it seems that clinicians and radiologists are becoming more isolated from each other, with less time being devoted to reviewing images together and more time being spent by clinicians simply reading radiology reports. This lack of communication is unfortunate for many reasons. First, in almost all cases, more information can be obtained from the radiologist in person rather than through a report. Second, the specific purpose of the examination may not be clear to the radiologist from the request and may be better clarified in person. Third, the appropriate test may not have been obtained.

Selecting the most appropriate imaging test for a particular question is not always straightforward. There is great variability from hospital to hospital regarding imaging techniques and expertise available; thus, the most appropriate test may vary from hospital to hospital. Although consulting your radiologists is probably the best place to start when uncertain about the selection of an imaging test, an additional resource is the American College of Radiology (ACR) Appropriateness Criteria available at http://acrsearch.acr.org/, or you can simply do a web search for appropriateness criteria. The ACR Appropriateness Criteria are a compilation of evidence-based recommendations to aid in the selection of radiologic imaging for over 186 medical conditions. The site is searchable for general conditions, such as headache, and specific conditions, such as pancreatitis. Examples of topics that may be of particular interest to nephrology practitioners include indeterminate renal masses, acute renal failure, chronic renal failure, hematuria, incidentally discovered adrenal mass, acute pyelonephritis, renal colic, and renovascular hypertension. Each topic is linked to a report that contains a literature review and discussion of that topic. A summary page is included with the appropriateness of imaging techniques (e.g., ultrasound, magnetic resonance imaging [MRI], etc.) ranked on a scale from 1 to 9 with the following interpretations: 1–3, usually not appropriate; 4–6, may be appropriate; 7–9, usually appropriate. The radiation dose for each test is also indicated.

The articles in this Moving Points feature on renal relevant radiology are intended to update nephrologists regarding the selection and interpretation of a variety of usual, new, and in-development radiologic tests for nephrology application. In each of these reviews, multiple images are presented to illustrate the imaging principles discussed.

This Moving Points begins with an overview by O’Neill (1) of the use of ultrasound, because ultrasound is the most commonly used radiologic imaging modality in nephrology; a clear understanding of its strengths and limitations is essential. Indeed, it is rationally argued that nephrology practitioners should begin to perform and interpret this procedure in larger numbers. Because AKI is one of the most common inpatient consultations for nephrologists and ultrasound is the most common imaging modality used to assess this disorder, the next review by Faubel et al. (2) examines the use of ultrasound with Doppler in the specific setting of AKI.

One of the newer fields of radiology is functional imaging, particularly as it applies to MRI. The work by Ebrahimi et al. (3) reviews the exciting potential of functional MRI to assess renal perfusion, renal function, tissue oxygen content, and morphologic changes. The techniques used in this developing area have the potential for widespread clinical applicability, particularly in the area of renovascular hypertension evaluation.

This collection also includes two reviews of radiologic imaging techniques in areas of focused interest: autosomal dominant polycystic kidney disease (ADPKD) and renal transplant (4,5). One could probably successfully complete a radiology fellowship, even if only patients with ADPKD were seen in one’s practice, because of the diverse range of renal and systemic complications seen in ADPKD, which is reviewed by Rahbari-Oskoui et al. (4). Likewise, a diverse array of radiologic imaging testing is commonly used in the care of renal transplant patients, which is reviewed by Sharfuddin (5).

It is hoped that the articles in the collection will provide a foundation for better communication between nephrology practitioners and radiologists, while also facilitating reasoned selection and astute interpretation of imaging techniques used in nephrology practice.

Disclosures

None.
References

Published online ahead of print. Publication date available at www.cjasn.org.