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Practical Topics and Updates in Renal Pathology

Medical renal biopsies are still commonly examined by pathologists who have no subspecialty fellowship training in renal pathology. Many surgical pathologists may feel comfortable handling the more common diseases, but they may not be fully aware of recent advances in understanding their pathogenesis. These advances have led to new testing methodologies as well as new or updated grading systems. There are also renal lesions which are not uncommon, but may be overlooked due to a lack of familiarity with them. Our goal with this series of articles is to provide pathologists who encounter renal biopsies in their practice with important updates concerning some of the more common medical kidney diseases and to highlight others which can be easily overlooked or misinterpreted.

First, Dr. Qi Cai and I will review significant research discoveries involving primary membranous nephropathy over the last ten years. These discoveries have revealed that most cases of "idiopathic" membranous nephropathy are caused by autoantibodies to the podocyte antigen phospholipase A2 receptor. Autoantibody to thrombospondin type 1 domain containing 7A has also been described in recent years. These revelations have led to commercially available ancillary tests which can improve patient prognostication and treatment.

Drs. Alexander Gallan and Anthony Chang review the pathology and numerous clinical scenarios in which thrombotic microangiopathy (TMA) can be seen. They discuss their approach to TMA and present a new paradigm and injury model for the disease which highlights the critical role that the complement system plays. TMA has been poorly understood in the past, but advances in our knowledge of the role of complement elucidated by the authors can lead to improvements in patient management.

Next, Drs. Zeljko Dvanajscak, L. Nicholas Cossey, and Christopher Larsen present a practical review of the most common renal intratubular casts. The authors discuss the pathologic mechanisms, clinical significance, and morphologic appearance of eight different cast types. Clinically significant casts can be easily overlooked or misdiagnosed, and the authors offer a highly useful guide for handling these cases.

Drs. Cossey, Dvanajscak, and Larsen next provide a guide for dealing with crystalline nephropathies. The authors give what they describe as a "practical toolkit" to use when encountering crystalline nephropathies. They cover all types including: calcium based, dysproteinemia-related, those due to metabolic disorders, and finally drug-induced.

Dr. Jared Hassler reviews the most common primary glomerulonephritis in the world, IgA nephropathy. The author discusses recent advances that have significantly added to our knowledge regarding the pathophysiology behind IgA nephropathy, and the use of the Oxford classification system for scoring renal biopsy findings. Oxford is the first evidence based classification system developed for IgA nephropathy and has been validated by multiple large studies around the globe. Dr. Hassler also reviews the differential diagnosis of IgA nephropathy which contains a number of diagnostic pitfalls with significant implications for patient care.

Finally, Dr. Jose Torrealba reviews the pathology of the kidney allograft. Transplant pathology is a complicated topic, and Dr. Torrealba gives a practical and comprehensive overview of the more commonly seen biopsy findings. Recent changes to the Banff classification are included. The author discusses a range of topics including: acute and chronic changes seen in association with cellular rejection and antibody-mediated rejection, polyomavirus nephritis, acute tubular necrosis, recurrent glomerular diseases, and de novo glomerular disease.

We sincerely hope that the reader finds these reviews of renal pathology useful in his or her daily practice.

Allen R. Hendricks (D.O)*
Department of Pathology, The University of Texas Southwestern Medical Center, Dallas, Texas, USA
E-mail address: allen.hendricks@utsouthwestern.edu.

* Correspondence to: The University of Texas Southwestern Medical Center, 5959 Harry Hines Blvd., Suite HP3-378, Dallas, Texas 75390-9234. Tel.: +(214) 645 5107; fax: +(214) 645 5106.

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