Patient Voice

1275 Psychiatric Problems Faced by Patients on Dialysis: The Missing Element
Sasha Couch
See related editorial and article on pages 1283 and 1363, respectively.

Editorials

1277 An Electronic CKD Phenotype: A Step Forward in Improving Kidney Care
Sri Lekha Tummalapalli and Carmen A. Peralta
See related article on page 1306.

1280 NSAIDs and Nephrotic Syndrome
Evangelina Mérida and Manuel Praga
See related article on page 1355.

1283 Burden of Psychiatric Illness in Patients with ESKD
Michael J. Fischer and James P. Lash
See related Patient Voice and article on pages 1275 and 1363, respectively.

1286 Imaging as a Noninvasive Tool for Evaluating Interstitial Fibrosis in Kidney Allografts
Emilio D. Poggio
See related article on page 1372.

Original Articles

Acute Kidney Injury and ICU Nephrology

1288 Secular Trends in Incidence, Modality and Mortality with Dialysis Receiving AKI in Children in Ontario: A Population-Based Cohort Study
Rahul Chanchlani, Danielle Marie Nash, Eric McArthur, Michael Zappitelli, Victoria Archer, John Paul Kuwornu, Amit X. Garg, Jason H. Greenberg, Stuart L. Goldstein, Lehana Thabane, and Ron Wald

1297 The Role of Volume Regulation and Thermoregulation in AKI during Marathon Running

Chronic Kidney Disease

1306 Development and Validation of a Pragmatic Electronic Phenotype for CKD
See related editorial on page 1277.

1315 Methods for Assessing Longitudinal Biomarkers of Time-to-Event Outcomes in CKD: A Simulation Study
Qian Liu, Abigail R. Smith, Laura H. Mariani, Viji Nair, and Jarcy Zee

1324 Family Perceptions of Quality of End-of-Life Care for Veterans with Advanced CKD
Claire A. Richards, Chuan-Fen Liu, Paul L. Hebert, Mary Ersek, Melissa W. Wachterman, Lynn F. Reinke, Leslie L. Taylor, and Ann M. O’Hare
Clinical Nephrology

1336 Association of Acute Increases in Plasma Creatinine after Renin-Angiotensin Blockade with Subsequent Outcomes
Edouard L. Fu, Marco Trevisan, Catherine M. Clase, Marie Evans, Bengt Lindholm, Joris I. Rotmans, Merel van Diepen, Friedo W. Dekker, and Juan-Jesus Carrero

Original Articles (Continued)

1346 The Acute Dialysis Orders Objective Structured Clinical Examination (OSCE): Fellow Performance on a Formative Assessment of Acute Kidney Replacement Therapy Competence
Lisa K. Prince, Robert Nee, and Christina M. Yuan for the Nephrology Education Research and Development Consortium (NERDC)

Glomerular and Tubulointerstitial Diseases

1355 Risk of Nephrotic Syndrome for Non-Steroidal Anti-Inflammatory Drug Users
Mohammad Bakhriansyah, Patrick C. Souverein, Martijn W.F. van den Hoogen, Anthonius de Boer, and Olaf H. Klungel
See related editorial on page 1280.

Maintenance Dialysis

1363 Psychiatric Illness and Mortality in Hospitalized ESKD Dialysis Patients
Paul L. Kimmel, Chyng-Wen Fwu, Kevin C. Abbott, Marva M. Moxey-Mims, Susan Mendley, Jenna M. Norton, and Paul W. Eggers
See related Patient Voice and editorial on pages 1275 and 1283, respectively.

Transplantation

1372 Combination of Functional Magnetic Resonance Imaging and Histopathologic Analysis to Evaluate Interstitial Fibrosis in Kidney Allografts
Wei Wang, Yuanmeng Yu, Jiqiu Wen, Mingchao Zhang, Jinsong Chen, Dongrui Cheng, Longjiang Zhang, and Zhihong Liu
See related editorial on page 1286.

Research Letter

1381 Nephrology Advanced Practitioners in the United States, 2010-2018
Kim Zuber, Jane Davis, and Kevin F. Erickson

Erratum

1383 Correction

Kidney Case Conference: Attending Rounds

1384 A Case of Drug-Induced Proximal Tubular Dysfunction
Andrew M. Hall and Robert J. Unwin

Kidney Case Conference: How I Treat

1388 Recurrent Calcium Kidney Stones
Lada Beara-Lasic and David S. Goldfarb

Nephropharmacology for the Clinician

1391 Biosimilars—Emerging Role in Nephrology
Jay B. Wish
On the Cover
What’s the diagnosis?

Case description:
A 69-year-old man with cirrhosis, CAD with heart failure (preserved EF), aortic stenosis/aortic insufficiency, hypertension, abdominal aortic aneurysm, and stage 3B CKD of uncertain etiology, Gilbert’s disease, and chronic macrocytic anemia (bone marrow biopsy revealed non-caseating granulomas with negative staining for micro-organisms and cancer cells) developed acute kidney injury (AKI) during hospitalization for workup of progressive weakness. Prior to the increase in serum creatinine, the patient was exposed to piperacillin-tazobactam for fever, which was subsequently diagnosed as influenza. The patient had transient hypotension but nephrotoxic medications were not administered prior to AKI. Exam revealed normal vital signs, mild hypervolemia, and absence of rash. Electrolytes were normal while serum creatinine was 3.2 mg/dL. Corrected serum calcium was 11.5 mg/dL. Ultrasound of the kidneys revealed 11.4 cm right kidney with mild echogenicity a few simple cysts and 11.7 cm left kidney with mild echogenicity. No hydronephrosis or stones were seen. Urinalysis revealed the following: SG 1.006, pH 8.0, 1+ protein, 2+ blood, 1+ leukocyte esterase. Urine microscopy revealed isomorphic erythrocytes 5-10/high-power field and leukocytes 5-10/high-power field but no casts or crystals. A kidney biopsy was undertaken for AKI, which revealed a triad of findings.

Image Description:
Image 1: The left panel reveals a diffuse inflammatory infiltrate consisting of lymphocytes, and macrophages along with non-caseating granulomas with multi-nucleated giant cells (Hematoxylin and Eosin stain). Stains for various micro-organisms and a diagnosis of sarcoidosis with kidney involvement was made.
Image 2: The middle panel shows biconcave cholesterol crystal clefts within the arterioles and glomerular capillaries (Hematoxylin and Eosin stain). The clefts are actually footprints of the cholesterol crystals, which are removed during the fixation process.
Image 3: The right panel demonstrates calcium-phosphate crystal deposition within tubules or nephrocalcinosis (Hematoxylin and Eosin stain). These crystals are not birefringent when polarized and stain positively with the von Kossa stain.

Teaching Points:
This case demonstrates the various processes that can affect the kidneys and lead to both acute and CKD. Sarcoidosis likely played a role in causing the underlying CKD and may have worsened with further infiltration of the kidney with some contribution from hypercalcemia. An elevated ACE level was also noted in the patient, making this case consistent with an atypical presentation of sarcoidosis with primarily bone marrow and kidney involvement. The nephrocalcinosis noted on biopsy likely developed as a result hypercalcemia and hypercalciuria from underlying sarcoidosis. The cholesterol crystal clefts in the arterioles and glomerular capillaries likely reflect atheroemboli spontaneously released from the abdominal aortic aneurysm, which subsequently lodge in the vasculature of the kidneys. Atheroembolic disease of the kidneys, which is now relatively rare, can present with acute, subacute or CKD along with other systemic manifestations (central nervous system, eye, gastrointestinal tract, feet/toes, skin, etc.) from atheroemboli to multiple organs. The patient was treated with prednisone 60 mg/d and hypercalcemia resolved and kidney function improved to serum creatinine 1.6 mg/dL over the next several weeks.

(Images and text provided by Naomi Shin, MD, Yale University School of Medicine; Gilbert W. Morckel, MD, PhD, Department of Pathology, Yale University School of Medicine; and Mark A. Perazella, MD, Section of Nephrology, Yale University School of Medicine.)