Patient Voice

1 Patients with Kidney Disease: Ready to Use Smartphones for Health Care Delivery?
Lana Schmidt
See related article on page 98.

Editorials

3 Long-Term Safety of Tolvaptan in ADPKD: Where Do We Stand?
Dipal M. Patel and Neera K. Dahl
See related article on page 48.

Sradha Kotwal and Vlado Perkovic
See related article on page 70.

9 Dietary Therapy for Managing Hyperphosphatemia
Yoko Narasaki and Connie M. Rhee
See related article on page 107.

12 Mobile Health in Dialysis: The Best Engagement Medium Is the One that’s with Patients
Karandeep Singh
See related article on page 98.

Original Articles

Acute Kidney Injury and ICU Nephrology

14 Acute Kidney Injury in a National Cohort of Hospitalized US Veterans with COVID-19
Benjamin Bowe, Miao Cai, Yan Xie, Andrew K. Gibson, Geetha Maddukuri, and Ziyad Al-Aly

26 Prospective Cohort Study of Renin-Angiotensin System Blocker Usage after Hospitalized Acute Kidney Injury

Chronic Kidney Disease

37 NAT8 Variants, N-Acetylated Amino Acids, and Progression of CKD
Shengyuan Luo, Aditya Surapaneni, Zihe Zheng, Eugene P. Rhee, Josef Coresh, Adriana M. Hung, Girish N. Nadkarni, Bing Yu, Eric Boerwinkle, Adrienne Tin, Dan E. Arking, Inga Steinbrenner, Pascal Schlosser, Anna Köttgen, and Morgan E. Grams

Cystic Kidney Disease

48 Multicenter Study of Long-Term Safety of Tolvaptan in Later-Stage Autosomal Dominant Polycystic Kidney Disease
Vicente E. Torres, Arlene B. Chapman, Olivier Devuyst, Ron T. Gansevoort, Ronald D. Perrone, Jennifer Lee, Molly E. Hoke, Alvin Estilo, and Olga Sergeyeva
See related editorial on page 3.
Diabetes and the Kidney

59 Effects of the Soluble Guanylate Cyclase Stimulator Praliciguat in Diabetic Kidney Disease: A Randomized Placebo-Controlled Clinical Trial
John P. Hanrahan, Ian H. de Boer, George L. Bakris, Phebe J. Wilson, James D. Wakefield, Jelena P. Seferovic, Jennifer G. Chickering, Yueh-tyng Chien, Kenneth Carlson, Michael D. Cressman, Mark G. Currie, G. Todd Milne, and Albert T. Proty

70 Network Meta-Analysis of Novel Glucose-Lowering Drugs on Risk of Acute Kidney Injury
Min Zhao, Shusen Sun, Zhenguang Huang, Tiansheng Wang, and Huilin Tang
See related editorial on page 6.

Geriatric and Palliative Nephrology

79 Availability, Accessibility, and Quality of Conservative Kidney Management Worldwide

Maintenance Dialysis

88 Zolpidem Versus Trazodone Initiation and the Risk of Fall-Related Fractures among Individuals Receiving Maintenance Hemodialysis
Magdalene M. Assimom and Jennifer E. Flythe

98 The Mobile Health Readiness of People Receiving In-Center Hemodialysis and Home Dialysis
Wael F. Hussein, Paul N. Bennett, Sloane Pace, Shijie Chen, Veronica Legg, Jugjeet Atwal, Sumi Sun, and Brigitte Schiller
See related Patient Voice and editorial on pages 1 and 12, respectively.

107 Effect of Phosphate-Specific Diet Therapy on Phosphate Levels in Adults Undergoing Maintenance Hemodialysis: A Systematic Review and Meta-Analysis
David E. St-Jules, Mary R. Rozga, Deepa Handu, and Juan Jesus Carrero
See related editorial on page 9.

Research Letters

121 COVID-19 in Peritoneal Dialysis Patients
Hua-Jun Jiang, Hui Tang, Fei Xiong, Wen-Li Chen, Jian-Bo Tian, Jing Sun, Jun-Wu Dong, Xiao-Hui Wang, Xiao-Fei Jin, Yan-Qiong Ding, Li Xu, Xiao-Ping Miao, and Chun Zhang

Divya Shankaranarayanan, Thangamani Muthukumar, Tarek Barbar, Aarti Bhasin, Supriya Gerardine, Perola Lamba, Lorenz Leuprecht, Sanjay P. Neupane, Thalia Salinas, Daniil Shimonov, Elly Varma, and Frank Liu

Erratum

127 Correction

Genomics of Kidney Disease

128 Clinical Integration of Genome Diagnostics for Congenital Anomalies of the Kidney and Urinary Tract
Rik Westland, Kirsten Y. Renkema, and Nine V.A.M. Knoers

Kidney Case Conference: How I Treat

138 Walkaway PIRRT (as SLED) for Acute Kidney Injury
Anna Burgner and Thomas Golper
141  Gender and CKD: Beyond the Binary
     Sofia B. Ahmed, Nathalie Saad, and Sandra M. Dumanski

144  Addressing Polypharmacy in Outpatient Dialysis Units
     Marisa Battistella and Patrick Ng

147  Incremental and Twice-Weekly Hemodialysis Program in Practice
     Mariana Murea and Kamyar Kalantar-Zadeh

150  What Does Uromodulin Do?
     Anne Kipp and Eric Olinger

Feature

154  Optimizing Peritoneal Dialysis–Associated Peritonitis Prevention in the United States: From Standardized Peritoneal Dialysis–Associated Peritonitis Reporting and Beyond

162  Klotho in Clinical Nephrology: Diagnostic and Therapeutic Implications
     Javier A. Neyra, Ming Chang Hu, and Orson W. Moe

On the Cover

What is the diagnosis?
A 74-year-old woman with past history of bronchial asthma (at the age of 50), diplopia, mononeuropathy multiplex, muscle weakness, paranasal sinus abnormalities, and positive for myeloperoxidase-ANCA (MPO-ANCA; at the age of 69) was admitted for the evaluation of kidney dysfunction because her serum creatinine levels had increased from 0.5 to 1.1 mg/dl (eGFR from 91 to 39 ml/min per 1.73 m²). Her body mass index was 22.1 kg/m². Her white blood cell count was 25,500/μL, 59% of which were eosinophils. She had 3.3 mg/dl C-reactive protein, MPO-ANCA was 0.5 EU, proteinase 3–ANCA was 0.5 EU, and she was negative for anti–glomerular basement membrane antibody. The urine test showed mild proteinuria (0.49 g/d) and massive glomerular hematuria.

Image Description:
On light microscopy of a kidney biopsy specimen, nine out of 26 glomeruli showed cellular crescents, with rupture of the glomerular basement membrane, fibrinoid necrosis (left), and infiltration of eosinophils (right). Tubulointerstitial nephritis and infiltration of inflammatory cells and eosinophils were observed, particularly around the affected glomeruli (right). Immunofluorescence showed no immune deposits (pauci-immune pattern), and there were no electron-dense deposits on electron microscopy.
Left: A section stained with Periodic acid methenamine silver–Masson shows a cellular crescent (large black arrow), rupture of the glomerular basement membrane (small black arrow), and fibrin deposition (white arrow). Original magnification, ×400.
Right: A section stained with hematoxylin and eosin shows fibrinoid necrosis (white arrow) with infiltration of eosinophils. Eosinophils were observed on tubulointerstitial nephritis (large black arrows) as well as on the affected glomeruli (small black arrow). Original magnification, ×400.

Teaching Points:
Rapidly progressive GN on microscopic polyangiitis is characterized by a rapid loss of kidney function and the kidney biopsy specimen showing the formation of glomerular crescents, and eosinophilic infiltration is usually rare in the glomeruli. However, necrotizing crescentic GN with infiltration of eosinophils may suggest kidney disease related to eosinophilic granulomatosis with polyangiitis. Eosinophils may cause glomerular cytotoxicity by secreting fibrin-rich coagulant factors in eosinophilic granulomatosis with polyangiitis, in a mechanism involving IL-5. Eosinophilic granulomatosis with polyangiitis is a systemic small- and medium-vessel necrotizing vasculitis, characterized by tissue infiltration by eosinophils. It occurs in people with multiorgan lesions, including adult-onset asthma, mononeuropathy or polyneuropathy, and paranasal sinus abnormalities. These characteristics are different from those of microscopic polyangiitis. The frequency of positive MPO-ANCA is reported to be around 40%–50%. The relationship between disease activity and ANCA titer is not high as in microscopic polyangiitis, but the mechanism via IL-5 is reported to have a close association with the disease activity of eosinophilic granulomatosis with polyangiitis.

Images and text provided by Naoya Toriu, Nephrology Center, Toranomon Hospital, Tokyo, Japan; Naoki Sawa and Junichi Hoshino, Nephrology Center, Toranomon Hospital, Tokyo, Japan and Okinaka Memorial Institute for Medical Research, Toranomon Hospital, Tokyo, Japan; Keiichi Kinowaki, Department of Pathology, Toranomon Hospital, Tokyo, Japan; and Yoshiyumi Ubara, Nephrology Center, Toranomon Hospital, Tokyo, Japan and Okinaka Memorial Institute for Medical Research, Toranomon Hospital, Tokyo, Japan.