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Patient Voice

1 Trust Patient Insights at Both the Individual and National Level

Paul T. Conway

See related editorial and articles on pages 3, 63, 100 and 109.

Editorials

3 CJASN: What's Behind and What's Ahead

Rajnish Mehrotra, Michel Chonchol, and Ian de Boer

See related Patient Voice editorial on page 1.

4 New Frontiers in Treating Uremic Metabolic Acidosis

Denver Brown and Michal L. Melamed

See related article on page 26.

6 Lowering Expectations with Niacin Treatment for CKD-MBD

Tilman B. Drüeke and Ziad A. Massy

See related article on page 36.

9 Consequences of Overinterpreting Serum Creatinine Increases when Achieving BP Reduction: Balancing Risks and Benefits of BP Reduction in Hypertension

Hala Yamout and George L. Bakris

See related article on page 73.

11 Life Expectancy Gains for Patients with ESRD

Kirsten L. Johansen

See related article on page 91.

13 Compelling Evidence of the Need for Policy Change to Decrease Deceased Donor Kidney Discard in the United States: Waste Not Want Less

Matthew Kadatz and John S. Gill

See related article on page 118.

Original Articles

Acute Kidney Injury and ICU Nephrology

16 Prognosis of Patients with Cirrhosis and AKI Who Initiate RRT

Andrew S. Allegretti, Xavier Vela Parada, Nwamaka D. Eneanya, Hannah Gilligan, Dihua Xu, Sophia Zhao, Jules L. Dienstag, Raymond T. Chung, and Ravi I. Thadhani

Chronic Kidney Disease

26 Randomized, Controlled Trial of TRC101 to Increase Serum Bicarbonate in Patients with CKD

David A. Bushinsky, Thomas Hostetter, Gerrit Klaerner, Yuri Stasiv, Claire Lockey, Sarah McNulty, Angela Lee, Dawn Parsell, Vandana Mathur, Elizabeth Li, Jerry Buysse, and Robert Alpern

See related editorial on page 4.

Chronic Kidney Disease (Continued)

36 The Effect of Extended Release Niacin on Markers of Mineral Metabolism in CKD

Rakesh Malhotra, Ronit Katz, Andrew Hoofnagle, Andrew Bostom, Dena E. Rifkin, Ruth McBride, Jeffrey Probstfield, Geoffrey Block, and Joachim H. Ix
See related editorial on page 6.

45 FGF23 and Left Ventricular Hypertrophy in Children with CKD

Mark M. Mitsnefes, Aisha Betoko, Michael F. Schneider, Isidro B. Salusky, Myles Selig Wolf, Harald Jüppner, Bradley A. Warady, Susan L. Furth, and Anthony A. Portale

Genetics

53 Whole Exome Sequencing of Patients with Steroid-Resistant Nephrotic Syndrome

Jillian K. Warejko, Weizhen Tan, Ankana Daga, David Schapiro, Jennifer A. Lawson, Shirlee Shril, Svjetlana Lovric, Shazia Ashraf, Jia Rao, Tobias Hermle, Tilman Jobst-Schwan, Eugen Widmeier, Amar J. Majmundar, Ronen Schneider, Heon Yung Gee, J. Magdalena Schmidt, Asaf Vivante, Amelie T. van der Ven, Hadas Ityel, Jing Chen, Carolin E. Sadowski, Stefan Kohl, Werner L. Pabst, Makiko Nakayama, Michael J.G. Somers, Nancy M. Rodig, Ghaleb Daouk, Michelle Baum, Deborah R. Stein, Michael A. Ferguson, Avram Z. Traum, Neveen A. Soliman, Jameela A. Kari, Sherif El Desoky, Hanan Fathy, Martin Zenker, Sevcen A. Bakkaloglu, Dominik Müller, Aytul Noyan, Fatih Ozaltin, Melissa A. Cadnapaphornchai, Seema Hashmi, Jeffrey Hopcian, Jeffrey B. Kopp, Nadine Benador, Detlef Bockenhauer, Radovan Bogdanovic, Nataša Stajić, Gil Chernin, Robert Ettenger, Henry Fehrenbach, Markus Kemper, Reyner Loza Munarriz, Ludmila Podracka, Rainer Büscher, Erkin Serdaroglu, Velibor Tasic, Shrikant Mane, Richard P. Lifton, Daniela A. Braun, and Friedhelm Hildebrandt

Glomerular and Tubulointerstitial Diseases

63 Predicting Outcome in Patients with Anti-GBM Glomerulonephritis

Emma E. van Daalen, J. Charles Jennette, Stephen P. McAdoo, Charles D. Pusey, Marco A. Alba, Caroline J. Poulton, Ron Wolterbeek, Tri Q. Nguyen, Roel Goldschmeding, Bassam Alchi, Meryl Griffiths, Janak R. de Zoysa, Beula Vincent, Jan A. Bruijn, and Ingeborg M. Bajema
See related Patient Voice editorial on page 1.

Hypertension

73 BP Reduction, Kidney Function Decline, and Cardiovascular Events in Patients without CKD

Rita Magriço, Miguel Bigotte Vieira, Catarina Viegas Dias, Lia Leitão, and João Sérgio Neves
See related editorial on page 9.

Maintenance Dialysis

81 Efficacy and Long-Term Safety of C.E.R.A. Maintenance in Pediatric Hemodialysis Patients with Anemia of CKD

Michel Fischbach, Elke Wühl, Sylvie C. Meyer Reigner, Zoe Morgan, and Franz Schaefer

91 Changes in Excess Mortality from End Stage Renal Disease in the United States from 1995 to 2013

Bethany J. Foster, Mark M. Mitsnefes, Mourad Dahhou, Xun Zhang, and Benjamin L. Laskin
See related editorial on page 11.

100 A Discrete Choice Study of Patient Preferences for Dialysis Modalities

Rachael C. Walker, Rachael L. Morton, Suetonia C. Palmer, Mark R. Marshall, Allison Tong, and Kirsten Howard
See related Patient Voice editorial on page 1.

Transplantation

109 Re-Establishing Brain Networks in Patients with ESRD after Successful Kidney Transplantation

Hui Juan Chen, Jiqiu Wen, Rongfeng Qi, Jianhui Zhong, U. Joseph Schoepf, Akos Varga-Szemes, Virginia W. Lesslie, Xiang Kong, Yun Fei Wang, Qiang Xu, Zhe Zhang, Xue Li, Guang Ming Lu, and Long Jiang Zhang
See related Patient Voice editorial on page 1.

118 Characteristics and Performance of Unilateral Kidney Transplants from Deceased Donors

Syed Ali Husain, Mariana C. Chiles, Samnang Lee, Stephen O. Pastan, Rachel E. Patzer, Bekir Tanriover, Lloyd E. Ratner, and Sumit Mohan
See related editorial on page 13.

Glomerular Diseases: Update for the Clinician

128 Dysproteinemias and Glomerular Disease

Nelson Leung, Maria E. Drosou, and Samih H. Nasr

Evidence-Based Nephrology

140 Lessons from CKD-Related Genetic Association Studies—Moving Forward

Sophie Limou, Nicolas Vince, and Afshin Parsa

See related commentary on page 153.

Commentary

153 Commentary on Lessons from CKD-Related Genetic Association Studies—Moving Forward

Bryan Kestenbaum and Stephen L. Seliger

See related article on page 140.

Kidney Case Conference: Attending Rounds

155 Hyperkalemia across the Continuum of Kidney Function

Biff F. Palmer and Deborah J. Clegg

Perspectives

158 TESTING Corticosteroids in IgA Nephropathy: A Continuing Challenge

Frederick W.K. Tam and Charles D. Pusey

161 Maintenance of Certification: Framing the Dialogue

Mitchell H. Rosner

164 Transformation of ABIM and What the Changes Mean to Nephrologists

T. Alp Ikizler and Jeffrey S. Berns

167 Toward More Meaningful Accountability to the Public: Assessing Lifelong Competence of Physicians

Mark E. Rosenberg

170 Maintenance of Certification: Demonstrating Ongoing Competence

Adam Weinstein

172 Coaching Nephrology Trainees Who Struggle with Clinical Performance

Karen M. Warburton and John D. Mahan

Feature

175 The Making Dialysis Safer for Patients Coalition: A New Partnership to Prevent Hemodialysis-Related Infections

Priti R. Patel and Kristin Brinsley-Rainisch

Review

182 Donor-Specific Antibodies in Kidney Transplant Recipients

Rubin Zhang

On the Cover

What's the diagnosis?

A 41-year-old Caucasian man with long-standing HIV was recently evaluated for elevated serum creatinine. He has been exposed to multiple combined anti-retroviral therapy (cART) agents, some of which are known to cause kidney injury, including tenofovir. He has also been on cART known to cause elevations in serum creatinine, including cobicistat. A recent ECG showed evidence of left ventricular hypertrophy. A follow-up echocardiogram re-demonstrated LVH, with MRI findings suggestive of Fabry Disease. Leukocyte alpha galactosidase level was measured at 0 (normal ≥ 23.1 nmol/hour/mg protein). He was started on agalsidase beta infusions every 2 weeks. The patient's serum creatinine was 1.7 mg/dL in January of 2017; to evaluate any potential kidney involvement, he was referred to Nephrology. A percutaneous kidney biopsy was performed, showing characteristic foamy, lipid-laden cells in glomeruli, tubules, and interstitium.

Light microscopy (H&E) shows a glomerulus with large foamy-appearing podocytes (arrows). Electron Microscopy shows renal tubular epithelium with classic lipid inclusion bodies characteristic of Fabry Disease.

Fabry Disease is an X-linked lysosomal storage disorder caused by a mutation in the GLA gene, leading to a deficiency in the enzyme alpha-galactosidase A. This can lead to damage in multiple organs including the heart, brain, and kidney due to cellular glycosphingolipid accumulation. Diagnosis is made based on serum testing in men and genetic analysis in women. In patients with multiple potential causes for renal dysfunction, which in this gentleman includes HIV and HIV-related medications, in addition to Fabry disease, it is essential to perform kidney biopsy. (Images and text provided by Steven Menez, Lois Arend and Mohamed Atta from Johns Hopkins School of Medicine, Baltimore, Maryland)

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