Original Investigations

182 Acute Kidney Injury and ICU Nephrology
Diagnostic Utility of Serial Microscopic Examination of the Urinary Sediment in Acute Kidney Injury
Vipin Varghese, Maria Soledad Rivera, Ali A. Alalwan, Ayman M. Alghamdi, Manuel E. Gonzalez, and Juan Carlos Q. Velez

192 Regional Citrate Anticoagulation Protocol for Patients with Presumed Absent Citrate Metabolism
Balazs Szamosfalvi, Vidhit Puri, Ryann Sohaney, Benjamin Wagner, Amy Riddle, Sharon Dickinson, Lena Napolitano, Michael Heung, David Humes, and Lenar Yessayan

205 Comparison of Equations To Estimate Glomerular Filtration Rate and Their Impact on Frequency of Cisplatin-associated Acute Kidney Injury

215 Development and Validation of a Web-Based Prediction Model for AKI after Surgery
Sang H. Woo, Jillian Zavodnick, Lily Ackermann, Omar H. Maarouf, Jingjing Zhang, and Scott W. Cowan

Chronic Kidney Disease

224 A Phase 1 Randomized Dose-Escalation Study of a Human Monoclonal Antibody to IL-6 in CKD
Kristen L. Nowak, Rahul Kakkar, Matt Devalaraja, Larry Lo, Wansu Park, Joga Gobburu, Douglas Kling, Michael Davidson, and Michel Chonchol

236 The Impact of CKD on Perioperative Risk and Mortality after Bariatric Surgery
Flavia Carvalho Silveira, William P. Martin, Gabrielle Maranga, Carel W. le Roux, and Christine J. Ren-Fielding

Clinical Nephrology

245 Sedentary Behavior and Change in Kidney Function: The Hispanic Community Health Study/Study of Latinos (HCHS/SOL)
Mary Hannan, Ana C. Ricardo, Jianwen Cai, Nora Franceschini, Robert Kaplan, David X. Marquez, Sylvia E. Rosas, Neil Schneiderman, Daniela Sotres-Alvarez, Gregory A. Talavera, Martha L. Daviglus, and James P. Lash

Diabetes and the Kidney

254 Clinical Outcomes by Albuminuria Status with Dulaglutide versus Insulin Glargine in Participants with Diabetes and CKD: AWARD-7 Exploratory Analysis
Katherine R. Tuttle, Brian Rayner, Mark C. Lakshmanan, Anita Y.M. Kwan, Manige Konig, Linda Shurzinske, and Fady T. Botros

Dialysis

263 COVID-19 Antibodies and Outcomes among Outpatient Maintenance Hemodialysis Patients

270 Inhibition of Lysyl Oxidase with β-aminopropionitrile Improves Venous Adaptation after Arteriovenous Fistula Creation
Diana R. Hernandez, Brandon Applewhite, Laisel Martinez, Tyler Laurito, Marwan Tabbara, Miguel G. Rojas, Yuntao Wei, Guillermo Selman, Marina Knyshova, Omaida C. Velazquez, Loay H. Salman, Fotios M. Andreopoulos, Yan-Ting Shiu, and Roberto I. Vazquez-Padron
Mineral Metabolism

279 Identification of Novel Biomarkers and Pathways for Coronary Artery Calcification in Nondiabetic Patients on Hemodialysis Using Metabolomic Profiling

Wei Chen, Jessica Fitzpatrick, Stephen M. Sozio, Bernard G. Jaar, Michelle M. Estrella, Dario F. Riascos-Bernal, Tong Tong Wu, Yunping Qiu, Irwin J. Kurland, Ruth F. Dubin, Yabing Chen, Rulan S. Parekh, David A. Bushinsky, and Nicholas E.S. Sibinga

290 Multidisciplinary Team versus a “Phosphate-Counting” App for Serum Phosphate Control: A Randomized Controlled Trial

Ana Cecilia Farfan-Ruiz, Daniel Czikk, Julie Leidecker, Tim Ramsay, Brendan McCormick, Kumanan Wilson, and Deborah Zimmerman

Nephrolithiasis

298 In Vivo Entombment of Bacteria and Fungi during Calcium Oxalate, Brushite, and Struvite Urolithiasis

Jessica J. Saw, Mayandi Sivaguru, Elena M. Wilson, Yiran Dong, Robert A. Sanford, Chris J. Fields, Melissa A. Cregger, Annette C. Merkel, William J. Bruce, Joseph R. Weber, John C. Lieske, Amy E. Krambeck, Marcelino E. Rivera, Timothy Large, Dirk Lange, Ananda S. Bhattacharjee, Michael F. Romero, Nicholas Chia, and Bruce W. Fouke

Transplantation

312 Long-Term Outcomes and Prognostic Factors in Kidney Transplant Recipients with Polycystic Kidney Disease

Gauri Bhutani, Brad C. Astor, Didier A. Mandelbrot, Lori Mankowski-Gettle, Timothy Ziemlewicz, Shane A. Wells, Leah Frater-Rubsam, Vanessa Horner, Courtney Boyer, Jennifer Laffin, and Arjang Djamali

Brief Communications

Cystic Kidney Disease

325 Mayo Imaging Classification May Be Useful in Determining the Need for Nephrectomy in ADPKD

Stephanie Rosenberg, Sarthak Virmani, Sharon Klarman, Samantha Santovasi, Feng Dai, and Neera K. Dahl

Dialysis

331 Factors Associated with Dialysis Discontinuation Outside of the Acute Care Setting

Matthew J. Roberts, Kirsten L. Johansen, Timothy P. Copeland, Charles E. McCulloch, Sarah Coufal, and Elaine Ku

Glomerular and Tubulointerstitial Diseases

336 Low-dose Rituximab Monotherapy or in Combination with Tacrolimus Is Effective in Primary Membranous Nephropathy

Vivek Pathak, Madhav Venkatesan, and Renu Regunathan-Shenk

Innovative Technology and Methodology

Dialysis

339 Novel Use of Premixed Dialysate Bags during Water Supply Interruption in Acute Hospital Setting

Orly F. Kohn, Miguel Plascencia, Yolanda Taylor, and Jay L. Koyner

Global Perspectives

344 Global Dialysis Perspective: Spain

Ramon Roca-Tey, Jose Ibeas, and J. Emilio Sánchez Alvarez

Perspective

350 Meeting the Demand for Renal Replacement Therapy during the COVID-19 Pandemic: A Manufacturer’s Perspective

Michael S. Anger, Claudy Mullon, Linda H. Ficociello, David Thompson, Michael A. Kraus, Pete Newcomb, and Robert J. Kossmann
Basic Science for Clinicians

355  Proximal Tubular Oxidative Metabolism in Acute Kidney Injury and the Transition to CKD
Jennifer A. Schaub, Manjeri A. Venkatachalam, and Joel M. Weinberg

Review Articles

365  Improving on the Adrogué–Madias Formula
Sheldon Chen, Michael Shieh, Robert Chiaramonte, and Jason Shey

371  How To Prescribe And Troubleshoot Continuous Renal Replacement Therapy: A Case-Based Review
Javier A. Neyra, Lenar Yessayan, Melissa L. Thompson Bastin, Keith M Wille, and Ashita J Tolwani

385  From Infancy to Fancy: A Glimpse into the Evolutionary Journey of Podocytes in Culture
Shivangi Agarwal, Yashwanth R. Sudhini, Jochen Reiser, and Mehmet M. Altintas

Clinical Images in Nephrology and Dialysis

398  A Transplant Patient with Blue Lips, Tongue, and Fingertips
Sriram Sriperumbuduri, Caitlin Hesketh, and Edward G. Clark

400  Unexpected Complication in an ESKD Patient during AVG Thrombectomy
Jasmeet Gill, Akinwande Akinfolarin, and Harold M. Szerlip

402  AKI in a Patient with Pyuria and an Alkaline Urine
Blaise Anthonissen, Jean-Philippe Lengelé, and Jean-François Cambier

On the Cover

Human kidney stones entomb microbes in vivo during their formation. These high resolution microscopy images are taken from 25 mm-thick doubly-polished petrographic thin sections of struvite and brushite stones and provide first direct evidence of this process. Background Image: Brushite kidney stone thin section under plane polarized transmitted light exhibiting tabular and acicular radiating low-birefringence gray crystals of brushite. Images within circles: Struvite kidney stone thin section showing brightfield images overlaid on superresolution autofluorescence (merge of blue, green and red channel images) taken at 140 nm resolution (Zeiss LSM 880 Airyscan Superresolution microscope). Entombed rod- and coccoid-shaped bacteria with bright red autofluorescence (AF) entombed in radiating acicular struvite crystals (uppermost left circle) and spherules of calcium phosphate (middle circle). The lowermost right circle shows dumbbell-shaped brushite crystals with dark blue AF and rod-shaped bacteria with light blue AF entombed at the center (nidus). Adapted from figures presented in “In Vivo Entombment of Bacteria and Fungi during Calcium Oxalate, Brushite and Struvite Urolithiasis” by Jessica J. Saw*, Mayandi Sivaguru*, Elena M. Wilson, Yiran Dong, Robert A. Sanford, Chris J. Fields, Melissa A. Cregger, Annette C. Merkel, William J. Bruce, Joseph R. Weber, John C. Lieske, Amy E. Krambeck, Marcelino E. Rivera, Timothy Large, Dirk Lange, Ananda S. Bhattacharjee, Michael F. Romero, Nicholas Chia, and Bruce W. Fouke. KIDNEY360 2: 298–311, 2021. doi: 10.34067/KID.0006942020.

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