

## Patient Voice

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**1611 Understanding Fatigue with Kidney Disease: A Kidney Patient's Journey with Post-Transplant Fatigue**

*Derek Forfang*

*See related article on page 1686.*

## Editorials

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**1613 Muscle Abnormalities with Kidney Failure**

*Peter Bárány*

*See related article on page 1676.*

**1615 Coffee Metabolites and Kidney Disease: Answers or More Questions?**

*Marilyn C. Cornelis and Britt Burton-Freeman*

*See related article on page 1620.*

**1617 ANCA Vasculitis Treatment in the Dialysis Patient: Caution Needed!**

*Elizabeth Hendren and Jai Radhakrishnan*

*See related article on page 1665.*

## Original Articles

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### Chronic Kidney Disease

**1620 Metabolites Associated with Coffee Consumption and Incident Chronic Kidney Disease**

*William J. He, Jingsha Chen, Alexander C. Razavi, Emily A. Hu, Morgan E. Grams, Bing Yu, Chirag R. Parikh, Eric Boerwinkle, Lydia Bazzano, Lu Qi, Tanika N. Kelly, Josef Coresh, and Casey M. Rebholz*

*See related editorial on page 1615.*

### Geriatric and Palliative Nephrology

**1630 Family Members' Understanding of the End-of-Life Wishes of People Undergoing Maintenance Dialysis**

*Fahad Saeed, Catherine R. Butler, Carlyn Clark, Kristen O'Loughlin, Ruth A. Engelberg, Paul L. Hebert, Danielle C. Lavallee, Elizabeth K. Vig, Manjula Kurella Tamura, J. Randall Curtis, and Ann M. O'Hare*

### Glomerular and Tubulointerstitial Diseases

**1639 C3 Glomerulopathy and Related Disorders in Children: Etiology-Phenotype Correlation and Outcomes**

*Edwin K.S. Wong, Kevin J. Marchbank, Hannah Lomax-Browne, Isabel Y. Pappworth, Harriet Denton, Katie Cooke, Sophie Ward, Amy-Claire McLoughlin, Grant Richardson, Valerie Wilson, Claire L. Harris, B. Paul Morgan, Svetlana Hakobyan, Paul McAlinden, Daniel P. Gale, Heather Maxwell, Martin Christian, Roger Malcomson, Timothy H.J. Goodship, Stephen D. Marks, Matthew C. Pickering, David Kavanagh, H. Terence Cook, and Sally A. Johnson, on behalf of the MPGN/DDD/C3 Glomerulopathy Rare Disease Group and National Study of MPGN/DDD/C3 Glomerulopathy Investigators*

**1652 Poly-IgA Complexes and Disease Severity in IgA Nephropathy**

*Xue Zhang, Jicheng Lv, Pan Liu, Xinfang Xie, Manliu Wang, Dan Liu, Hong Zhang, and Jing Jin*

## Maintenance Dialysis

- 1665 Disease Activity and Adverse Events in Patients with ANCA-Associated Vasculitides Undergoing Long-Term Dialysis**  
*Maëlis Kauffmann, Mickaël Bobot, Thomas Robert, Stéphane Burtey, Grégoire Couvrat-Desvergnès, Frédéric Lavainne, Xavier Puéchal, Benjamin Terrier, Thomas Quéméneur, Stanislas Faguer, Alexandre Karras, Philippe Brunet, Cécile Couchoud, and Noémie Jourde-Chiche, on behalf of the REIN registry and the French Vasculitis Study Group*  
See related editorial on page 1617.
- 1676 Skeletal Muscle Phenotype in Patients Undergoing Long-Term Hemodialysis Awaiting Kidney Transplantation**  
*Jean-Sébastien Souweine, Fares Gouzi, Éric Badia, Pascal Pomies, Valérie Garrigue, Marion Morena, Maurice Hayot, Jacques Mercier, Bronia Ayoub, Moglie Le Quintrec, Fabrice Raynaud, and Jean-Paul Cristol*  
See related editorial on page 1613.

## Transplantation

- 1686 Airflow Limitation, Fatigue, and Health-Related Quality of Life in Kidney Transplant Recipients**  
*Tim J. Knobbe, Daan Kremer, Michele F. Eisenga, Marco van Londen, António W. Gomes-Neto, Rianne M. Douwes, C. Tji Gan, Eva Corpeleijn, Coby Annema, Gerjan Navis, Stefan P. Berger, and Stephan J.L. Bakker, on behalf of TransplantLines Investigators*  
See related Patient Voice on page 1611.
- 1695 COVID-19–Associated Mortality among Kidney Transplant Recipients and Candidates in the United States**  
*Sumit Mohan, Kristen L. King, S. Ali Husain, and Jesse D. Schold*
- 1704 Timing of Kidney Clamping and Deceased Donor Kidney Transplant Outcomes**  
*Simon Ville, Marine Lorent, Clarisse Kerleau, Anders Asberg, Christophe Legendre, Emmanuel Morelon, Fanny Buron, Valérie Garrigue, Moglie Le Quintrec, Sophie Girerd, Marc Ladrière, Laetitia Albano, Antoine Sicard, Denis Glotz, Carmen Lefaucheur, Julien Branchereau, David Jacobi, and Magali Giral, for the EKITE Consortium*

## Research Letters

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- 1715 Kidney Effects of Empagliflozin in People with Type 1 Diabetes**  
*David Z.I. Cherney, Petter Bjornstad, Bruce A. Perkins, Julio Rosenstock, Dietmar Neubacher, Jan Marquard, and Nima Soleymanlou*
- 1720 Humoral Response to mRNA versus an Adenovirus Vector-Based SARS-CoV-2 Vaccine in Dialysis Patients**  
*Jeffrey G. Mulhern, Amit Fadia, Ruchir Patel, Linda H. Ficociello, Joanna Willetts, Ines A. Dahne-Steuber, Melanie C. Pollan, Claudy Mullon, Josephine DeLisi, Curtis Johnson, Chance Mysayphonh, Robert J. Kossmann, Michael S. Anger, and Jeffrey L. Hymes*

## Kidney Transplantation Long-Term Management Challenges

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- 1723 Chronic Allograft Injury**  
*Eric Langewisch and Roslyn B. Mannon*
- 1730 Recurrent Glomerular Disease after Kidney Transplantation: Diagnostic and Management Dilemmas**  
*Audrey Uffing, Frank Hullekes, Leonardo V. Riella, and Jonathan J. Hogan*

## Kidney Case Conference: How I Treat

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- 1743 Could This Be Alport Syndrome?**  
*Rachel Lennon and Alessia Fornoni*

## Perspectives

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- 1746 COVID-19 Vaccination Imperatives in People on Maintenance Dialysis: An International Perspective**  
*Peter G. Blake, Michelle A. Hladunewich, and Matthew J. Oliver*
- 1749 Training Nephrology Fellows in Home Dialysis in the United States**  
*Nupur Gupta and Brent W. Miller*

## 1752 The Future Nephrology Workforce: There Will Be One

Mark G. Parker and Stephen M. Sozio

## Feature

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## 1755 Evidence For and Against Direct Kidney Infection by SARS-CoV-2 in Patients with COVID-19

Luise Hassler, Fabiola Reyes, Matthew A. Sparks, Paul Welling, and Daniel Batlle

## Review

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## 1766 Kidney Disease among People Who Are Incarcerated

Matthew Murphy, Ann Ding, Justin Berk, Josiah Rich, and George Bayliss

### On the Cover

#### Case Description

A 62-year-old male with a history of kidney failure secondary to vesicoureteral reflux on long-term hemodialysis (HD) presented for kidney transplant. He had been on hemodialysis for 3 years. There was no history of diabetes mellitus or arterial hypertension. Physical examination revealed asthenia, and the patient was overweight (29 kg/m<sup>2</sup>) without muscle atrophy but with a significant decrease in muscle endurance. Interestingly, 1 year after kidney transplant, the patient did not report tiredness. Muscle biopsy was performed just before the kidney transplant.

#### Image Description:

Transmission electron microscopy analysis on muscle biopsy showed sarcomeric disorganization and proteolysis in the *vastus lateralis* muscles of long-term HD patients (center). We also observe an altered repartition of mitochondria coupled with an increase of mitochondrial size (left and center). Furthermore, patients present mitochondria with swelling or disrupted internal structures. Mit, mitochondria; Z, Z-line; C, control; P, patient. Scale bar 500 nm.

#### Teaching Points:

In HD patients, cellular muscle abnormalities are difficult to understand because of comorbidity, malnutrition, age, or sedentary lifestyle. In order to overcome these confounding factors, muscles were analyzed in highly selected HD patients undergoing kidney transplantation who were free of major comorbidities. Our study describes a specific muscle dysfunction characterized by a transition from type 1 (aerobic) to type 2 (anaerobic) muscle fibers without proteasome activation. Moreover, we observed alteration of mitochondria structure related to mitochondrial dysfunction through the activation of autophagy and mitophagy. These observations strongly suggest an energy deficiency in oxidative muscle and could explain the impaired endurance observed in long-term HD patients free of malnutrition and major comorbidities.

(Images and text provided by Fabrice Raynaud, Montpellier University, INSERM, Montpellier, France)

The cover image can be found in this issue of *CJASN* as Figure 3 A and C in the article titled "Skeletal Muscle Phenotype in Patients Undergoing Long-Term Hemodialysis Awaiting Kidney Transplantation," by Dr. Jean-Sebastien Souweine and colleagues on pages 1676–1685 (doi: 10.2215/CJN.02390221).