Preface – Advances in CKD 2019

Fruit basket by Andres Otero. Mr. Otero is an artist who exhibits regularly at the New York clinic where he receives dialysis.

Color version available online

Renal Research Institute's (RRI) 21st International Conference on Dialysis, Advances in Chronic Kidney Disease in New Orleans, LA, is assembling as in previous years the world's leading scientists to discuss the latest developments in kidney research, spanning from current findings of interest to the renal community, to basic science, clinical nephrology, acute and chronic kidney disease, hemodialysis and peritoneal dialysis management, kidney transplantation, and epidemiology.

We have expanded the scope of the topics and our audience by having in addition to our Main Conference a 1-day Pediatric Symposium for pediatric nephrologists and fellows, and a 2-day Nurse Care Team Track, addressing topics of interest to renal nurses and shared topics with nephrologists.

This special issue of *Blood Purification* includes an article on the aftermath of hurricane Maria in Puerto Rico. The island suffered from widespread destruction and a major humanitarian crisis. Bonilla-Félix focuses in his article "Disaster Management in a Nephrology Service: Lessons Learned from Hurricane Maria" on the management of pediatric patients and those with chronic renal disease, who

were extremely vulnerable to the development of complications as direct consequence of the disaster. He highlights the need to continuously reassess priorities when facing such a catastrophe and describes the slow way to recovery.

A decline in glomerular filtration rate and sickle cell nephropathy are associated with early mortality in children with sickle cell disease (SCD). Olaniran et al. present a comprehensive review of SCD pathophysiology and diverse clinical manifestations, identifying gaps and the latest management strategies of SCD nephropathy.

Residual kidney function is present in over 80% of patients at the time of dialysis initiation. However, residual kidney function is not commonly factored in hemodialysis treatment prescriptions, which are set at 3 times/week as the norm. Recently, more and more experts call for an incremental hemodialysis start. Chazot and Jean provide arguments in support of the traditional thrice-weekly hemodialysis initiation.

Attaining fluid balance in hemodialysis is an important goal with often disappointing results in clinical practice. The comprehensive overview on body fluids in end stage renal disease by Kooman et al. reveals its complexi-

ties. The authors also describe how technology like bio-impedance may aid in identifying patients with fluid overload, and how knowledge of absolute blood volume may predict the tolerance to dialysis treatment.

The optimal dialysate calcium level remains undetermined. The key role of dialysate calcium is thoroughly presented by van der Sande et al., starting from its pathophysiology and historical perspective to the latest challenges when prescribing dialysate calcium. The goal of finding an optimal range is elegantly delineated in the consensus of a more physiologic approach to maintain a neutral diffusive calcium balance during dialysis and to adjust the interdialytic calcium intake to a level within current recommendations.

The world's elderly population continues to grow rapidly and, in parallel, the number of elderlies with end stage kidney disease requiring dialysis. A mature arteriovenous fistula (AVF) is the preferred vascular access in hemodialysis patients. However, as described by Asif et al. in his review article, creation of AVF is a major challenge in the elderly, due to a high prevalence of comorbidities and a high access failure rate. The authors highlight the critical importance of preoperative mapping, surgical expertise, and describe recent innovations of percutaneous fistula creation. This novel method may offer multiple advantages, including being performed on an outpatient basis and without general anesthesia.

In the U.S., the time between AVF creation and successful use is longer compared to most other developed countries. Rosales et al. describe the use of central venous oxygen saturation (ScvO₂) and estimated upper body blood flow as means to follow AVF maturation and its accompanying hemodynamic adaptation. The authors describe a rapid increase in estimated upper body blood flow in patients with successful AVF maturation, but not in those with complications. This method holds promise as an operator-independent tool to routinely track AVF maturation.

Zhang et al. report an association between intradialytic ScvO₂ variability and survival in hemodialysis patients with a central venous catheter as vascular access. The study was conducted over a period of 3 years. The authors posit that the higher ScvO₂ variability is related to changes in cardiac output caused by intradialytic cardiac events, such as stunning, arrhythmias, and others.

Janosevic et al. address the important issue of managing hemodialysis patients with challenging behavior. Such complicated behavior is usually related with a specific set of circumstances due to patients' illness, non-adherence to treatment, physical or verbal abuse, and depression. Healthcare providers must study and under-

stand these circumstances, which could be the consequence of untreated mental health issues or logistical barriers rather than the patient being a "bad person."

Kidney patients have an increased risk of skin and soft tissue infections, as described by Van de Velde-Kossman in her article on cutaneous infections. The author emphasizes maintenance of cutaneous integrity and skin barrier function to reduce infection severity and limit complications of cutaneous disorders. Prevention with early diagnosis, and prompt treatment is the key to positive outcomes.

Zgoura et al. are charting new territory by using virtual reality (VR) simulation as a tool for peritoneal dialysis training. The investigators hypothesize that VR training programs in clinical practice will be particularly effective when combined with traditional teaching methods. The beneficial effect may go beyond a safe clinical performance and include cost reduction.

Virzi et al. study the effects of humoral mediators in plasma from septic patients on viability of renal tubular cells, monocytes, and hepatocytes. The investigators report that the effect of humoral mediators on renal tubular cells and monocytes is different from that of hepatocytes. The investigators could not exclude that both intrinsic and extrinsic pathways are involved in mediating apoptosis.

The RRI continues to be dedicated to advancing therapy options for kidney patients, and to provide the highest caliber of care based on research and advanced clinical technology. RRI is committed to research and innovation that will lead to improved patient outcomes and quality of life. It has active national and international research programs with strong academic alliances with the University of Michigan, Ann Arbor, MI; University of North Carolina, Chapel Hill, NC; University of Rochester, Rochester, NY; Icahn School of Medicine at Mount Sinai, New York, NY; St. Raphael Hospital/Yale, New Haven, CT; University of Massachusetts, Lowell, MA; Pontifical Catholic University of Paraná, Curitiba, Brazil; the University of Guadalajara, Mexico; the University of Maastricht, The Netherlands; the Taipei Medical University Hospital, Taiwan; the University of Konstanz, Germany; and the University of Graz, Austria, among others.

We hope that you will enjoy the wide range of papers published in this issue of *Blood Purification* and that you will consider attending next year's 22nd International Conference on Dialysis, Advances in Kidney Disease 2020, which will take place in Los Angeles, CA.

The Editors,

Peter Kotanko, Laura Rosales and Claudio Ronco