Contents

IX Preface
Ronco, C. (Vicenza); Rosner, M.H. (Charlottesville, Va.)

New Perspectives in Hemodialysis

1 Outcomes of Patients with Planned Initiation of Hemodialysis in the IDEAL Trial

10 More Frequent Hemodialysis: What Do We Know? Where Do We Stand?

17 Nocturnal Home Hemodialysis: Which of Your Patients Should Choose This Modality?
Rocco, M.V. (Winston-Salem, N.C.)

25 Perspectives in Home Hemodialysis Therapy
Hoenich, N.A. (Newcastle upon Tyne); Ronco, C. (Vicenza)

30 Lessons from Recent Trials on Hemodialysis
Locatelli, F.; Cavalli, A.; Viganò, S.M.; Pontoriero, G. (Lecco)

39 The Quest to Standardize Hemodialysis Care
Hegbrant, J. (Lund); Gentile, G. (Perugia); Strippoli, G.F.M. (Bari)

Cardiovascular Issues

50 The Burden of Cardiovascular Risk in Chronic Kidney Disease and Dialysis Patients
(Cardiorenal Syndrome Type 4)
House, A.A. (London, Ont.); Ronco, C. (Vicenza)

57 CD14+CD16+ Monocytes from Chronic Kidney Disease Patients Exhibit Increased Adhesion Ability to Endothelial Cells
Martín-Malo, A.; Aljama, P. (Córdoba)

62 Uric Acid as a Cardiometabolic Risk Factor: To Be or Not to Be
Kanbay, M. (Kayseri); Afşar, B. (Konya); Covic, A. (Iasi)
VI Contents

68 **Treatment Disparities in Acute Coronary Syndromes, Heart Failure, and Kidney Disease**
McCullough, P.A.; Maynard, R.C. (Novi, Mich.)

74 **Hypervolemic and Optivolemic Natriuretic Peptides in Acute Heart Failure**
Xue, Y.; Taub, P.R.; Fard, A.; Maisel, A.S. (San Diego, Calif.)

Vascular Access and Dry Weight

80 **Do Catheters Harm the Patient?**
Kuhlmann, M.K. (Berlin)

84 **The Evils of Intradialytic Sodium Loading**

Evolution of Dialysis Membranes

92 **Recent Trials on Hemodiafiltration**
Locatelli, F.; Manzoni, C.; Del Vecchio, L.; Cavalli, A.; Pontoriero, G. (Lecco)

101 **Antioxidant Dialytic Approach with Vitamin E-Coated Membranes**

107 **Dynamic Hemodialysis: A Potential Solution for Middle Molecule Removal**
Kim, J.C.; Garzotto, F.; Ronco, C. (Vicenza)

Lipid Disorders and Metabolism

113 **Metabolic Derangements Seen in Chronic Kidney Disease and End-Stage Renal Disease Patients**
Gupta, D.; Misra, M. (Columbia, Mo.)

120 **Recent Insights in Inflammation-Associated Wasting in Patients with Chronic Kidney Disease**
Meuwese, C.L. (Leiden/Stockholm); Carrero, J.J.; Stenvinkel, P. (Stockholm)

127 **Factors Determining Insulin Resistance in Chronic Hemodialysis Patients**
Hung, A.M.; Ikizler, T.A. (Nashville, Tenn.)

135 **Lipid Abnormalities in Patients with Chronic Kidney Disease**
Keane, W.F.; Tomassini, J.E.; Neff, D.R. (Whitehouse Station, N.J.)

143 **Statins and Lipid-Lowering Strategies in Cardiorenal Patients**
Bianchi, S.; Grimaldi, D. (Arezzo); Bigazzi, R. (Livorno)

Calcium, Phosphorus, Vitamin D and Vitamin D Receptor Activation

151 **Restoring the Physiology of Vitamin D Receptor Activation and the Concept of Selectivity**
Cozzolino, M.; Brenna, I.; Volpi, E.; Ciceri, P.; Mehmeti, F.; Cusi, D. (Milan)

157 **Unmet Need in Renal Protection – Do We Need a More Comprehensive Approach?**
de Zeeuw, D. (Groningen)
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>161</td>
<td>The Impact of Paricalcitol on Left Ventricular Hypertrophy</td>
<td>Cozzolino, M. (Milan); Ronco, C. (Vicenza)</td>
</tr>
<tr>
<td>166</td>
<td>Vitamin D Receptor Activation: Clinical Outcomes</td>
<td>Covic, A.; Apetrii, M. (Iasi)</td>
</tr>
<tr>
<td>172</td>
<td>Vitamin D Receptor Activation: Implications for Daily Practice</td>
<td>Warnock, D.G. (Birmingham, Ala.)</td>
</tr>
<tr>
<td>181</td>
<td>Fluid Overload in Hemodialysis and Acute Kidney Injury</td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>Noninvasive Volume Assessment in the Emergency Department: A Look at B-Type Natriuretic Peptide and Bioimpedance Vector Analysis</td>
<td>Tuy, T. (Singapore); Peacock, F. (Cleveland, Ohio)</td>
</tr>
<tr>
<td>201</td>
<td>Extracorporeal Ultrafiltration for Congestive Heart Failure Patients</td>
<td>Costanzo, M.R. (Naperville, Ill.); Ronco, C. (Vicenza)</td>
</tr>
<tr>
<td>208</td>
<td>Acute Kidney Injury Biomarkers and Endpoints for Clinical Trials</td>
<td>Murray, P.T. (Dublin)</td>
</tr>
<tr>
<td>213</td>
<td>Impact of Acute Kidney Injury on Chronic Kidney Disease and Its Progression</td>
<td>Sanoff, S.; Okusa, M.D. (Charlottesville, Va.)</td>
</tr>
<tr>
<td>218</td>
<td>Acute Kidney Injury and Its Management</td>
<td>Chuasuwan, A. (Pittsburgh, Pa./Bangkok); Kellum, J.A. (Pittsburgh, Pa.)</td>
</tr>
<tr>
<td>226</td>
<td>Wearable Dialysis: What is Missing?</td>
<td>Polaschegg, H.-D. (Köstenberg)</td>
</tr>
<tr>
<td>231</td>
<td>Current Technological Approaches for a Wearable Artificial Kidney</td>
<td>Kim, J.C.; Ronco, C. (Vicenza)</td>
</tr>
<tr>
<td>237</td>
<td>From Wearable Ultrafiltration Device to Wearable Artificial Kidney</td>
<td>Davenport, A. (London); Ronco, C. (Vicenza); Gura, V. (Los Angeles, Calif.)</td>
</tr>
<tr>
<td>243</td>
<td>Remote Monitoring for the Wearable Artificial Kidney</td>
<td>Rosner, M.H. (Charlottesville, Va.); Ronco, C. (Vicenza)</td>
</tr>
</tbody>
</table>
Anemia and Its Management

248 **Anemia Trials in CKD and Clinical Practice: Refining the Approach to Erythropoiesis-Stimulating Agents**
de Francisco, A.L.M.; Piñera, C. (Santander)

255 **New Erythropoiesis-Stimulating Agents and New Iron Formulations**
Locatelli, F.; Del Vecchio, L. (Lecco)

261 **Impact of Dialysis Technique on Renal Anemia**
Panichi, V.; Scatena, A.; Paoletti, S.; Migliori, M. (Lido di Camaiore)

266 **Cardio-Renal Anemia Syndrome**
von Haehling, S. (Berlin); Anker, S.D. (Rome)

274 **Author Index**

276 **Subject Index**
The Vicenza International Courses are renowned scientific events held in the city of Andrea Palladio. Since 1982 international courses focused on peritoneal dialysis have been held every 3 years, featuring an outstanding faculty and gathering participants from numerous countries. Starting in 1998, the theme of critical care nephrology has also been covered every 3 years, leading to the most comprehensive review in the field of intensive care nephrology. The third theme of the Vicenza Courses is hemodialysis. This course is also held every 3 years. The course on hemodialysis is a collaborative effort with industry leaders. A series of lectures and panel discussions are held during the days of the course. A unique aspect of the course is the debates between leading experts on controversial subjects. The course includes contributions from well-recognized international experts. Participants for the course come from all over the world, providing a rich environment to discuss how best to care for patients with kidney disease.

In 2002, the first edition of the course compendium focused on hemodialysis technology, while in 2005, attention was placed on the clinical aspects of hemodialysis. Each course is also preceded by a lecture series devoted to the theoretical basis of hemodialysis. During the meeting, special recognition is always assigned to a distinguished scientist who has made outstanding contributions to the field.

In 2008, the main theme of the International Vicenza Course on hemodialysis was the importance of cardiovascular complications in dialysis. On that occasion, the course was held in conjunction with the first international congress of the International Society for Hemodialysis (ISHD). This joint venture for the education and dissemination of science in dialysis between Vicenza and ISHD was continued in October 2010 with a special conference on wearable, portable and miniaturized devices for hemodialysis and ultrafiltration. During this meeting, the most important advances concerning the development of the wearable artificial kidney were presented by leading experts from around the world.

The year 2011 brings forth another outstanding International Vicenza Course on hemodialysis. The 20th Annual International Vicenza Course on Hemodialysis includes another exceptional group of speakers, and we are excited that this volume of Contributions to Nephrology will compile the material presented in the conference. The Vicenza course also celebrates international collaboration in the care of patients with kidney disease. In 2009, a research and educational collaboration between the International Renal Research Institution in Vicenza and the University of Virginia in Charlottesville was conceived. In the years since this collaboration began, numerous manuscripts have been published and this volume continues that spirit of collaborative research. This edition combines the contributions of this year’s course together with some other contributions from the special conference on wearable devices. The main themes covered are the cardio-renal syndromes, new technologies in hemodialysis, new
dialysis membranes and dialysis techniques, the importance of vitamin D receptors in renal and extrarenal physiology, the control of risk factors such as blood pressure and lipid disorders, and finally, a special interest is placed on new models of organization including large dialysis networks and healthcare economics. Acute kidney injury and its impact on the subsequent development of chronic kidney disease are also discussed together with the use of modern biomarkers.

We believe this publication will be a useful supplement to the lectures presented at the 3-day Vicenza course, as well as a useful tool for future consultation by clinicians and all who are involved in the care of patients with end-stage kidney disease. We truly appreciate the help of the members of the faculty who have made this edition possible.

We give our sincere thanks to Anna Saccardo, Marta Scabardi and Ilaria Balbo who worked in Vicenza on the final arrangement of the course. A special thanks to Karger for the usual outstanding quality of the publication.

Claudio Ronco, Vicenza
Mitchell H. Rosner, Charlottesville, Va.