Drug Dosage

The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.
Contents

Preface VIII
Obituary X

Technique of CAVH

Eisenhauer, Th. (Göttingen): Development and Actual Performance of Continuous Arteriovenous Hemofiltration (CAVH) 1
Olbricht, C. J.; Schurek, H.-J.; Stolte, H.; Koch, K.-M. (Hannover): The Influence of Vascular Access Modes on the Efficiency of CAVH 14
Schrader, J.; Scheler, F. (Göttingen): Coagulation Disorders in Acute Renal Failure and Anticoagulation during CAVH with Standard Heparin and with Low Molecular Weight Heparin 25
Schultheis, R.; Brings, W.; Glöckner, W. M.; Sieberth, H.-G. (Aachen): Device for Controlled Cyclic Substitution during Spontaneous Filtration 64
Schurek, H.-J.; Biela, J. D. (Hannover); Bergmann, K. H. (Hechingen): Further Improvement of a Mechanical Device for Automatic Fluid Balance in CAVH. 67
Ronco, C.; Brendolan, A.; Borin, D.; Bragantini, L.; Fabris, A.; Feriani, M.;
Chiaramonte, S.; La Greca, G. (Vicenza): Continuous Arteriovenous Hemofiltration in Newborns 76

Contents VI

CAVH in Cardiopulmonary Diseases

Magilligan, D. J., Jr. (Detroit, Mich.): Effect of Ultrafiltration on Lung Water 80
Koller, W. F.; Benzer, H. M.; Pauser, G. F. (Vienna): CAVH in Acute Respiratory Failure 96
Coraim, F.; Wolner, E. (Vienna): Management of Cardiac Surgery Patients with Continuous Arteriovenous Hemofiltration 103
Maritano, M.; Avalle, M.; Gianferrari, P.; Guglielmotti, E.; Pacitti, A.; Segoloni, G.;
Vignotto, F. (Turin): Changes in Hemodynamics and Alveolar-Arterial Oxygen Tension Difference (Aa D02Q) in Patients with Adult Respiratory Distress Syndrome during Fluid-Removal by Ultrafiltration 111
Coraim, F.; Fasol, R.; Stellwag, F.; Wolner, E. (Vienna): Continuous Arteriovenous Hemofiltration (CAVH) after Cardiac Surgery 116
Ronco, C.; Borin, D.; Brendolan, A.; Bragantini, L.; Fabris, A.; Feriani, M.;

CAVH in Renal Failure

Kindler, J.; Rensing, M.; Sieberth, H.-G. (Aachen): Prognosis and Mortality of Acute Renal Failure 129
Stiller, S.; Mann, H. (Aachen): Comparison of Different Methods of Blood Detoxication 143
Seybold, D. (Bayreuth): Differential Indication to Other Methods of Artificial Kidney Treatment 152
Klehr, J.; Kascheil, H. J.; Kuchenbecker, Ch.; Munch, H. G.; Spannbrucker, N. (Bonn): Clinical Results of Continuous Arteriovenous Hemofiltration 159
Lehmköster, A.; Steen, M.; Moser, Th. (Ludwigshafen-Oggersheim): Continuous Arteriovenous Hemofiltration in Severe Burn Injuries 166
Weiss, L.; Danielson, B. G.; Fellström, B.; Wahlberg, J.; Wikström, B. (Uppsala): CAVH with AV-Shunts in 37 Critically Ill Patients with Acute Renal Failure (ARF) 175
Filos, K.; Doehn, M.; Neugebauer, I. (Hamburg): Ultrafiltration as a Substitute for Hemodialysis in the Intensive Care Unit 184

Metabolism and Parenteral Nutrition

Bartlett, R. H. (Ann Arbor, Mich.): Energy Metabolism in Acute Renal Failure 194
Certainly the most physiological form of assuring the proper equilibrium of water, electrolyte, and acid-base balances is continuous renal function. Starting from this basis, it would seem that continuous substitution, using an artificial kidney in whatever form, represents the best replacement. This enables us to avoid rapid fluctuations of the state of hydration, and also sudden changes in the retention parameters and in the electrolytes. From this point of view, continuous arteriovenous hemofiltration (CAVH) represents a better form of therapy than any of the intermittent methods of detoxification. Because of its simplicity, the method has rapidly become widely used, including in centers which previously did not treat acute renal failure cases.

The most important question to be faced by this conference is whether CAVH really does have the advantages I outlined just now, or whether it does not also involve substantial disadvantages. The use of this method by inexperienced therapeutic teams or even individuals has, through inadequate balancing, resulted in cases of very serious hyperhydration or of extreme exsiccosis. And standard problems of acute renal failure, such as the involvement of other organs and the need to consider the altered pharmacokinetics, have been left unconsidered.

But even when carried out properly, to the rules of the art, CAVH involves a number of problems. It is absolutely essential to take them into account when using the method. I mention here only the vascular access problems, the continuous heparinization, and the often inadequate efficacy in hypercatabolism.
On many occasions I was able to discuss these and other problems of CAVH with Peter Kramer, we finally decided to hold a joint symposium to discuss the results achieved to date and the problems remaining to be solved. I most deeply regret that we must face this task today without his stimulating help.

Aachen, November 1984 Heinz-Günter Sieberth

Obituary

Prof. Dr. med. Peter Kramer1 studied at Innsbruck, at Freiburg, and at Göttingen, where his doctoral dissertation under Prof. M. Schwab was on separate-side renal function studies in the initial stage of essential hypertension. His period as a research assistant included eighteen months at the Middlesex General Hospital, New Brunswick, N. J., USA, under a rotating internship arrangement, and subsequent theoretical training in the physiology department (Prof. Ochwadt) of the Max Planck Institute of Experimental Medicine in Göttingen. After training as a specialist, which he started in 1971 as a research assistant at the Medical Clinic and Policlinic he received in 1974 the Venia Legendi for internal medicine from the medical faculty of the Georg-August University of Göttingen. He became senior clinical physician in 1977, extra-numerary professor in 1978 and professor in 1980.

Peter Kramer was a physician by conviction and calling, and a passionate nephrologist. His wide-ranging interests were directed equally to clinical practice and to theory, and he was as fascinated by the problems of the pharmacokinetics of renal insufficiency as by dialysis technique. He made a decisive contribution to the question of the pathological mechanism of hyponatremia in the genesis of hypertension, and the results of his extensive studies on the pharmacokinetics of the cardiac glucosides form an essential part of present-day clinical practice. The development of hemofiltration, which originated in Göttingen and is long recognized as a method of equal value to hemodialysis for treating patients with chronic renal insufficiency, owes a great deal to Peter Kramer. We must thank his

1 Born 8th April 1938 in Mödling, near Vienna; died 7th October 1984 in Göttingen
gift for observation for the discovery of a simplified method of filtration, the technique of continuous arteriovenous hemofiltration (CAVH). Its use has rapidly spread in intensive wards. This scientific commitment did not go unrecognized: one of Peter Kramer’s research projects was adopted by the Artificial Kidney Program of the NIH, Bethesda, USA; he received numerous invitations to give papers and was chosen as the leading member of the E.D.T.A. registration committee.

An eagerness or even passion for hard work, a capacity for rigorous action, a profusion of ideas, and infectious optimism were Peter Kramer’s conspicuous qualities. A brilliant speaker, he was an enthusiastic teacher, able to generate a like enthusiasm in his students. His sudden death has set an all too early end to a scientific career of great promise and to a life wholly dedicated to his profession as a physician. Peter Kramer will not be forgotten by any of those who knew him.

F. Scheler, Göttingen