Editorial

End-stage renal disease (ESRD) patients suffer from cardiovascular complications. Various endogenous and exogenous risk factors contribute to oxidative stress and inflammation. These factors play a major role in the pathogenesis of atherosclerosis and cardiovascular disease. The majority of ESRD patients are hypertensive. High systolic and normal or low diastolic blood pressure as well as wide pulse pressure resemble isolated systolic hypertension of elderly subjects but occurs decades earlier in chronic renal failure patients. Long-standing high (but also low) blood pressure is also a major cardiovascular risk factor for the dialysis population, and needs to be corrected.

Symptomatic hypotension during hemodialysis is a risk factor, particularly for the elderly and diabetic patient population requiring renal replacement therapy. Devices for blood volume and blood temperature control allow the reduction in the incidence of intradialytic hypotension. Modification of the dialysis regimen (e.g. short daily or slow daily nocturnal hemodialysis) improves nutritional status, quality of life, control of blood pressure, phosphorus and anemia as well as survival. Unique bacteriological qualities, simple but effective volume control and extreme flexibility in adapting the composition of the dialysate to the patient's needs are combined in the GENIUS® hemodialysis system.

Loss of vitamin C during hemodialysis or hemodiafiltration may reduce plasma ascorbate levels, particularly if vitamin C supplementation is inadequate. Ascorbate is a potent antioxidant both in plasma and intracellularly. Therefore, adequate vitamin C supplementation (up to

200 mg/day) is recommended for ESRD patients on renal replacement therapy.

Biocompatibility of dialyzers is still a clinical issue. White blood cell activation during extracorporeal circulation, however, does not only depend on the membrane material used but also on the presence or absence of endogenous inhibitors of leukocyte activation. Biocompatibility is also an issue in peritoneal dialysis. Glucose degradation products (GDPs) generated during heat sterilization of the peritoneal dialysis fluid affect peritoneal cell function. On the other hand, GDP reduction improves clinical outcomes. Cancer antigen 125 serves as an *in vivo* marker of biocompatibility in peritoneal dialysis. It may be used to monitor mesothelial cell mass with regard to biocompatibility.

Continuous renal replacement therapy is the treatment of choice for management of acute renal failure in critically ill patients. This treatment modality improves cardiovascular stability in patients with multiple organ failure. The amount of dialysis also has a significant influence on mortality. Nevertheless, the role of extracorporeal therapy on the removal of inflammatory mediators and/or toxins remains unclear. Of particular importance are pharmacological considerations for clearance calculations and dosages of antibiotic therapy in critically ill patients.

The issue 'Treatment Options in Dialysis' summarizes new insights for the optimal care of patients with chronic and acute renal failure.

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