

Water-soluble vitamin status in chronic on-line hemodiafiltration patients

Recent years have witnessed an increase in the use of convection-based hemodialysis techniques. Hemodiafiltration has gained on popularity because of its increased clearance of middle molecules, and possible positive effect on cardio-vascular mortality.

Both hemodialysis and hemodiafiltration are not selective, and important nutrients can be lost during dialysis. It has been shown, on this behalf, that water-soluble vitamins are easily dialyzed and are insufficiently replaced with standard diet. These vitamins are therefore currently substituted with vitamin supplements in most Swiss dialysis centers. These supplements contain in general thiamin, riboflavin, pyroxidin, folic acid and vitamin C.

Current dosing schedules are based on studies in hemodialysis. However, it is actually unclear, whether larger losses of water soluble vitamins occur in hemodiafiltration, and what optimal vitamin substitution should be in these patients.

Aim of the study: to assess the status of water soluble vitamins in chronic hemodialysis patients receiving hemodiafiltration and vitamin supplements, and to study hemodiafiltration-induced losses.

Setting: monocentric, observational study in 40 chronic hemodialysis patients.

Method:

- 1) In a first step we will measure circulating levels of all relevant water-soluble vitamins (vitamin B1, B2, B5, B6, B8, B9 and vitamin C) in a population of chronic hemodiafiltration patients.
- 2) In a sub-group of patients, we will measure the clearance of the above mentioned vitamins using continuous sampling of spent dialysate throughout a dialysis session.

All vitamins concentrations will be measured at the 'Institut Suisse des Vitamines' in Epalinges. The concentrations of vitamin C will be analyzed by high-performance liquid chromatography (HPLC) with an electrochemical detector. Vitamins B1, B2, B5, B6, B8, and B9 concentrations will be measured using functional assays routinely performed in the laboratory using adapted microbiologic methods on microplates with different bacterial strains.