On-Line Hemodiafiltration: All That Glitters Is Not Gold

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Dear Editor,

We read with great interest the September 2015 supplement of Blood Purification entitled 'Is Hemodiafiltration the Current Gold Standard?' and we would briefly comment on a few topics that have not been discussed there.

Having still unresolved the question of whether online hemodiafiltration (HDF) improves patient survival or not [1], the heart of the matter is what convection volume is required to achieve reduction in mortality [2] or whether inconsistent results of clinical trials may possibly be due to bias [3]. Other hypotheses to explain the failure in improving mortality rate are basically lacking in required facts and information. We believe that 2 neglected issues should be considered.

We have already underlined [4] that the burden of glucose delivered by online HDF could negatively affect morbidity and mortality rates of hemodialysis patients also having diabetes. This is in agreement with our thought that the highest hazard ratio for all-cause mortality is associated with the diabetes status reported in the ESHOL study [5].

Similarly, we would conjecture that the load of carbonic dioxide (CO₂) by on-line HDF could deteriorate survival rates of patients with chronic obstructive pulmonary disease (COPD) and possibly of those with marginal cardiopulmonary status unable to handle any CO₂ overload.

In online HDF, the source of CO₂ is just the infusate. As known, it is simply ultra-pure dialysate infused as replacement fluid. It should be stressed that the dialysate contains a remarkable amount of CO₂ (close to 100 mm Hg [6], as a result of the reaction of the acid by the buffer in the

final diluted dialysate). Note that in the post-dilution mode, the CO₂ is delivered directly into a patient's bloodstream. It is needless to say that the larger volume of infusate, the heavier the burden of CO₂ (and of glucose). It is to be noted that this load is in addition to the amount of CO₂

Fig. 1. Example of gas analysis in on-line hemodiafiltration. PCO₂ is for partial pressure of carbon dioxide.

diffusing through the dialyzer, just as it occurs during bicarbonate dialysis [7] (fig. 1). In conclusion, the delivery of both glucose and CO₂ might affect morbidity and mortality of patients in online HDF (mainly in post-dilution mode). Recalling also the increasing prevalence of diabetes and COPD among ESKD patients [8, 9]

we look forward to randomized control trials focused on these issues. In the meanwhile, we feel that it is not advisable to recommend the use of 'the highest possible convection dose' and of 'the highest possible infusion flow rate for the individual characteristics' [10]. On the contrary, we would suggest that one exercises cau-

tion when using online HDF in diabetics, COPD and cardiovascular high-risk patients.

Disclosure Statement

None declared.

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