Feasibility of high convection volumes in on-line haemodiafiltration (HDF)

A. Ficheux1, F. Gayrard1, F. Duranton1, C. Guzman1, J. Bismuth-Mondolfo2, P. Brunet3, M-F. Servel2 and À. Argilés1,2

Introduction

Recent randomised controlled prospective trials (1,2) suggest that on-line haemodiafiltration (HDF) improves survival, provided that it reaches high convective volumes. However, while these results await confirmation, there is scant information on the consequences of modifying convection volumes in vivo.

Aim

We wanted to evaluate the consequences of increasing convection volumes in the feasibility of the prescribed treatment in on-line post-dilutional HDF.

Methods

Transmembrane (TMP), venous and arterial pressures, infusion flow as well as alarms were continuously recorded. Total convection volume achieved, meanTMP, number of alarms/session were analyzed.

Results

The obtained convection volumes added to the dialysis setting (± S.E.) were 12.9±0.2 (under), 20.6±0.4 (GK_D-UF-max) and 24.5±0.6 (over) L/session respectively (p<0.001)(Fig 3).

Mean TMP of the recorded values during the session (~400 measurements) increased with convection (fig 4) and were 79±2, 121±2, 185±4 and 242±4 mmHg respectively (p<0.001).

The number of infusion flow reductions for TMP alarms/session was 0, 0, 0.06±0.04 and 0.97±0.13 respectively (p<0.001)(Fig 5).

The number of dialysis sessions achieving the prescribed convection volume was 100, 100, 94 and 33% respectively (p<0.001)(Fig 6).

Conclusions

Setting an HDF system at the QUF of GK_D-UF-max resulted in convection volumes in agreement with those recommended by the recent RCTs (> 20L). Higher convection volumes provoke alarms, and have an associated discomfort for the patient and nursing staff and more rarely achieve the prescribed convection volumes. Using on-line HDF at the GK_D-UF-max allows achieving high convection volumes with no supplementary concern. Beyond GK_D-UF-max the instability of the system makes the benefits of convection less clear.

References