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Machine and Dialyzer for online Hemodiafiltration

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Despite continuous improvement in hemodialysis (HD) devices, membrane biocompatibility and dialysate purification, mortality among these patients remains unacceptably high. Although the use of high-flux membranes delay the long-term complications of hemodialysis including dialysis-related amyloidosis, hyperphosphatemia, cardiovascular risk and anemia, convective therapies should be considered to exploit the high permeability of high-flux membranes. Consequently, high-volume online hemodiafiltration (HDF) marks a new step toward native kidney blood purification [1, 2]. Recently, initial barriers to the use of HDF have been overcome owing to significant advances in technology. The development of new dialysis machines that allow an automatic convection flow rate in order to maximize the convective volume have reduced the risk of hemoconcentration and have increased convective volume. Currently, various modalities have been developed and in use in clinical setting. Among them, pressure control mode is known to achieving the high convection volume, independent of changing dialyzer and patient characteristics, throughout the dialysis sessions [3]. High-flux membranes are needed in online HDF to increase the clearance of middle-large molecules. The selection of an adequate membrane and hemodiafilter is important to perform HDF efficiently and safely. Thus, the choice of membrane and dialyzer among the wide selection available on the market is the key to obtain the desired blood purification for online HDF. The dialyzer should have a surface area between 1.50~2.10 m^2, and a high permeability to fluid (K_{UF} >40 ml/h/mmHg) and solute (sieving coefficient for β_2-microglobuin >0.6) [1]. Therefore, technological developments of machines and dialyzers for online HDF would be offered more effective uremic substances, and lead to improved survival.

Key words: online HDF, machine, membrane

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