

SIGNIFICANCE STATEMENT

Evidence suggests that the hemodialysis procedure might induce brain injury. The transition to dialysis has been associated with a significant loss of cognitive function. Furthermore, cerebral ischemic injury increased after hemodialysis initiation and lowering the dialysate temperature attenuated the progression of white matter lesions in the brain. However, the mechanism by which hemodialysis could contribute to brain injury is unknown. This study demonstrates that hemodialysis induces a significant reduction in brain perfusion. This reduction might be a mechanism underlying the ischemic brain injury. A higher pH, body temperature, and ultrafiltration volume and rate were associated with lower brain perfusion. These observations might form a point of departure for further research to develop hemodialysis protocols that minimize or prevent cerebrovascular stress.