Continuous Ambulatory Peritoneal Dialysis Is Superior to Hemodialysis in Chronic Dialysis Patients with Cerebral Hemorrhage

N.	Noriaki	Yorioka ^a
H.	Hiroaki	Oda ^a
T.	Takahiko	Ogawa ^a
Y.	Yoshihiko	Taniguchi ^a
S.	Shigeyuki	Kushihata ^a
A.	Atsuo	Takemasa ^a
K.	Koji	Usui ^b
K.	Kenichiro	Shigemoto ^b
S.	Satoru	Harada ^b
M.	Michio	Yamakido ^a

^a2nd Department of Internal Medicine, Hiroshima University School of Medicine, and
^bIchiyokai Harada Hospital, Hiroshima, Japan

Noriaki Yorioka, MD, Second Department of Internal Medicine, Hiroshima University School of Medicine, 1-2-3-Kasumi, Minamiku, Hiroshima City 743 (Japan)

Dear Sir,

In both Japan and Western countries, cerebrovascular disease is as frequent as cardiac disease in patients on chronic dialysis and is a major cause of death [1, 2]. Erythro-poietin is currently used for treating renal anemia, but hypertension is a frequent side effect and this drug may increase the risk of cerebrovascular disease, particularly cerebral hemorrhage.

Since the post-onset management of cerebral hemorrhage is as important as its prevention, we reviewed patients who

developed cerebral hemorrhage during chronic hemodialysis (HD) or continuous ambulatory peritoneal dialysis (CAPD) in order to investigate the optimum method of blood purification after the ictus.

The subjects were 13 patients who developed cerebral hemorrhage while receiving chronic HD or CAPD (HD: 379 cases; CAPD: 54 cases; from HD to CAPD: 8 cases; from CAPD to HD: 1 case) at the Second Department of Internal Medicine of Hiroshima University School of Medicine and Ichiyokai Harada Hospital between April 1985 and September 1992. The patients included 10 males and 3 females aged from 41 to 76 years (mean: 58.1 ± 9.2 years). The cause of chronic renal failure was chronic glomerulo-nephritis in 8 cases, diabetic nephropathy in 3 cases, lupus nephritis in 1 case and unidentified in 1 case. Hypertension was present in all but 2 patients. The other complications included hepatic failure and chronic rheuma-

Table 1. Dialysis patients developing cerebral hemorrhage (April 1985-September 1992)

toid arthritis in patient 2, visual impairment in patient 9, and diabetes in patient 12. The duration of dialysis before the occurrence of cerebral hemorrhage ranged from 3 to 164 months, average 52.8 months. Hemorrhage affected the putamen in 4 patients, the internal capsule in 2, the pons in 2, the cerebellum in 1, caudatum in 1, and the hypothalamus in 1, while the other 2 patients had subarachnoidal hemorrhage. Before the ictus, HD had been performed in 10 patients and CAPD in 3. Afterwards, HD was continued in 3 patients, CAPD replaced HD in 4, CAPD was continued in 3, and dialysis was not performed in 3 because of their poor general condition. The 4 patients with replacement of HD by CAPD and the 2 patients who continued on CAPD survived, but the 3 patients who continued HD and the 3 without dialysis died soon after the occurrence of cerebral hemorrhage. These results suggest that CAPD is superior to HD for blood purification after cerebral hemorrhage.

HD has the following drawbacks in patients with cerebral hemorrhage: (1) It enhances cerebral edema and increases intra-cranial pressure. (2) Anticoagulants given during HD may worsen bleeding and there is a risk of cerebral herniation depending on the site of bleeding. (3) It is difficult to control the

blood pressure during HD. In contrast, CAPD has the following advantages: (1) There is less burden on the cardiovascular system. (2) No anticoagulant is required, so there is less risk of further bleeding. (3) Continuous dialysis is associated with a lower risk of exacerbating cerebral edema. With regard to cerebral edema during dialysis, Krane [3] measured the intracranial pressure in HD and CAPD patients with cranial complications, and reported the pressure rose to 80-100 mm Hg after the start of HD compared with a pressure of 17-52 mm Hg in the CAPD patients. Krane [3] concluded that if CAPD could not be performed, HD should be performed with low blood flows, addition of mannitol, and a high-sodium content dialysate should be used. Barbour[4] has suggested that the number of HD should be minimized to prevent the aggravation of cerebral edema. Gokal et al. [5] always selected CAPD when dialysis was instituted in renal failure patients with underlying or complicating cerebrovascular disease. When HD is replaced by CAPD, extracorporeal ultrafiltration may also be required because fluid removal by CAPD alone may be insufficient. In such patients, we use nafamostat mesilate as an anticoagulant.

Thus, our findings and those of others suggest that chronic dialysis patients should be treated with CAPD after the occurrence of cerebral hemorrhage.

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Yorioka/Oda/Ogawa/Taniguchi/

Kushihata/Takemasa/Usui/Shigemoto/

Harada/Yamakido

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