

Factors that Influence the Intractability Degree of Blood Pressure Control in Hemodialysis Patients

Joong-Rock Hong · Hyo-Wook Gil · Jong-Oh Yang · Eun-Young Lee · Jae-Ouk Ahn · Sae-Yong Hong

Department of Internal Medicine, College of Medicine, Soonchunhyang University, Cheonan, Korea

Background : Hypertension is a major risk factor contributing to the high cardiovascular morbidity in uremic patients and has been found in approximately 80% of patients with ESRD. Many studies have reported that about 80% of HTN in ESRD patients can be controlled by non-pharmacologic management. But clinically it is difficult to control the blood pressure (BP) in these patients without using antihypertensive drugs. Furthermore the degree of difficulty to control hypertension varies substantially from one patient to another. We aimed to investigate the factors that influence the intractability degree of BP control.

Material and Methods : Patients with ESRD (n=114) were grouped into four categories by the degree of intractability to control blood pressure. The BP of the patients in group 1 was normal and no antihypertensive medication was necessary (n=22). For patients in group 2, only one antihypertensive drug was needed for BP control (n=32). Group 3 patients (n=46) needed a combination of two or three categories of antihypertensive drugs; minoxidil was not dispensed in this group. Group 4 required more than three categories of antihypertensive drugs including minoxidil (n=14) for BP control. We measured the concentrations of PTH, renin, aldosterone, epinephrine, norepinephrine (NEP) and Kt/V urea, EPO etc in all patients.

Results : The fractional clearance of urea as a function of its distribution volume (Kt/V urea) was significantly lower in group 3 and 4 than in group 2 ($p<0.01$), but no such difference was traced between group 1 and the other groups 2-4. Concentrations of PTH were significantly higher in group 4 than the rest of the groups ($p<0.01$). Pre-HD NEP concentrations were significantly higher in group 4 than the other groups 1-3 ($p<0.05$). Factors traditionally associated with hypertension did not seem relevant in our study to the degree of hypertension in ESRD patients who underwent HD: BMI, interdialytic weight gain, hemoglobin (Hb), hematocrit (Hct), erythropoietin (EPO) concentrations, cholesterol concentrations, triglyceride concentrations, and the activity of the renin-aldosterone.

Conclusion : Poor Kt/V urea, elevated PTH concentrations, and elevated concentrations of plasma NEP seems to be more associated with the degree of intractability in HTN control. Proper management of the Kt/V urea, secondary hyperparathyroidism, Pre-HD plasma NEP concentrations may be an effective way of controlling intractable hypertension in ESRD patients on HD.