

POST-DIALYSIS MEAN ARTERIAL PRESSURE IS THE BEST PREDICTOR OF LEFT VENTRICULAR HYPERTROPHY IN HAEMODIALYSIS PATIENTS

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Ninety percent of haemodialysis (HD) patients have hypertension yet less than 50% of them achieve the targets. Inadequately controlled hypertension is associated with left ventricular hypertrophy (LVH) and LVH is known to be an independent predictor of cardiovascular mortality and sudden death in HD patients. The Renal Association Standards suggest 2 different BP targets for HD patients – pre-HD <140/90 mmHg and post-HD <130/80. However, a number of studies suggest interdialytic BP, especially ambulatory BP, to be the best predictor of BP control.

In this study, we aimed to assess which BP reading, pre or post HD, correlates well with left ventricular mass index (LVMI), as a marker of LVH and a measure of long-term BP control, in a model that takes into account the other confounders of LVH in HD.

Of 648 patients with HD in 2 centres, those on HD <6 months, those with history of significant CAD, or evidence of heart failure or valvular disease on echo were excluded. We also excluded all patients in whom appropriate M-mode echocardiographic study was not possible (n = 126). Of the 100 patients that met the inclusion criteria, 35 were female, 65 were Caucasian, and 28 were diabetic. Data on BP readings, antihypertensive medication, interdialytic weight gain, haemoglobin, phosphate, and PTH over the preceding 3 months were collected and averaged for the purpose of analysis. All patients had M-mode echocardiogram and LVMI was calculated using the Penn Convention equation.

The mean pre-HD BP was $145/75 \pm 21.5/13.6$ mmHg and the post-HD BP was $133/70 \pm 22.0/11.8$ mmHg with less than 50% patients achieving RA targets. The mean LVMI was $203.7\text{g/m}^2 \pm 73.9\text{g/m}^2$ with 88% of patients having LVH. On uni-variate analysis, mean pre and post HD systolic, diastolic and mean arterial (MAP) pressures, post-HD pulse pressure, and ethnicity significantly correlated with LVMI. However, on step-wise multiple regression analysis only mean post dialysis MAP correlated with LVMI ($p < 0.001$, $r = 0.363$). The model included age, ethnicity, primary diagnosis, inter-dialytic weight gain, haemoglobin, phosphate, PTH, average BP, pulse pressure and the use of RAS blocking medication.

In conclusion, in this study post-HD mean arterial pressure has been found to be the only predictor of LVH taking into account all putative causes of LVH in HD patients. We contend that: a. post-HD BP measurements are more important than pre-HD BP in assessing BP control, and b. MAP as a measure of overall BP control is more important than either systolic and/ or diastolic BP and should be included in the recommended targets.