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Dialysis

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Effects of abdominal aortic calcification on blood pressure in patients undergoing hemodialysis

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Background: Abdominal aortic calcification (AAC) is highly prevalent in end-stage renal disease patients. Its extent is known to increase with the duration of hemodialysis (HD). Thus, patients with extensive AAC lesions might have greater changes in blood pressures (BP) and more events of intradialytic hemodynamic instability than those with lesser degrees of AAC during long-term HD.

Methods: To investigate the association between the extent of AAC and the subsequent changes in pre-HD BP and intradialytic BP, 4-year HD-related BP and laboratory data were collected for 37 HD patients. The AAC severity was assessed with the Kauppila scoring system using left lateral lumbar spine radiography. The patients were divided into two groups according to AAC scores; group 1 (AAC score ≥ 8 , n = 10) and group 2 (AAC score < 8 , n = 27). Hemodynamic instability was assessed on the basis of the number of intradialytic hypotension (IDH) episodes (SBP < 100 mmHg) per total HD sessions for every 6 months during the 4 years.

Results: The mean age of the patients was 57 ± 10 years; there were 17 (45.9%) men, and 16 (43.2%) diabetics among the 37 patients. The mean values were as follows: HD duration, 5.9 ± 3.8 years; age-adjusted Charlson Comorbidity index score, 3.6 ± 1.3 ; and initial AAC score, 5.7 ± 4.8 . There were no significant differences in the sex ratio, proportion of diabetics, age, HD duration, pre-HD systolic BP (SBP), diastolic BP (DBP), pulse pressure (PP), or laboratory data between the groups. A linear mixed model analysis of the 4-year data showed that group 1 had significantly lower DBP and higher PP than group 2 (p = 0.006). However, the incidence of IDH was not different between the groups.

Conclusion: The extent of AAC seems to be associated with changes in the BP. However, a prospective long-term study is needed to prove the correlation between the AAC and IDH.

Keywords: arterial calcification, blood pressure, hemodialysis, intradialytic hypotension