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Dialysis

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Low Dentin Matrix Protein 1 is Associated with Incident Cardiovascular Events in Peritoneal Dialysis Patients

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Background: Recent reports demonstrated that dentin matrix protein 1 (DMP1) acts as an inhibitor of vascular calcification and might be a potential biomarker for chronic kidney disease-mineral and bone disorder, however, the role of DMP1 has never been explored in dialysis patients. We investigated the prognostic value of DMP1 on cardiovascular outcomes in prevalent peritoneal dialysis patients.

Methods: We recruited 223 prevalent peritoneal dialysis and divided them into high and low DMP1 groups according to log transformed plasma DMP1 levels. Lateral lumbar spine radiographs were used for measurement of vascular calcification. Major cardiovascular events were compared between the two groups. A Cox proportional hazards analysis determined whether DMP1 is independently associated with cardiovascular outcomes.

Results: The mean age was 52.1±11.8 years, and 116 [52.0%] patients were male. The median value of log DMP1 was 0.91 (0.32–2.81 ng/mL). The multiple logistic regression analysis indicated that DMP1 levels were independently associated with the presence of vascular calcification after adjustment for multiple confounding factors (odds ratio, 0.766; 95% confidence interval [CI], 0.634–0.924; P=0.005). During a mean follow-up duration of 34.6 months, incident cardiovascular events were observed in 41 (18.4%) patients. A Kaplan-Meier plot showed that the low DMP1 group had a significantly higher rate of incident cardiovascular events compared with the high DMP1 group (log-rank test, P=0.026). In addition, multiple Cox proportional hazard analysis showed that low DMP1 was significantly associated with incident cardiovascular events (log 1 increase: hazard ratio=0.855; 95% CI=0.743–0.984; P=0.029) after adjustment for multiple confounding factors.

Conclusion: We showed that low DMP1 levels were significantly associated with presence of vascular calcification, and were independently associated with the incident cardiovascular events in prevalent peritoneal dialysis patients. DMP1 might be considered the novel factor that contributing the pathophysiology of cardiovascular disease in dialysis patients.

Keywords: DMP1, Peritoneal dialysis, Vascular calcification, Cardiovascular event