



# Why do we need regional chronic kidney disease-mineral bone disorders guidelines?

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It is well known that elevated serum calcium, phosphorus, and parathyroid hormone (PTH) levels are associated with increased cardiovascular events as well as all-cause mortality in chronic dialysis patients [1]. Thus, different countries have explored and created clinical practice guidelines for management of chronic kidney disease-mineral bone disorders (CKD-MBD) [2–4].

Globally, the Kidney Disease Outcome Quality Initiative (KDOQI) and Kidney Disease: Improving Global Outcomes (KDIGO) guidelines are most commonly used [2,3]. However, it is doubtful that these global guidelines can be successfully applied in all countries, because there are regional differences in foods, healthcare policy and regulation, and economic situation.

As a regional guide, the Japanese Society for Dialysis Therapy (JSDT) published clinical practice guidelines for management of secondary hyperparathyroidism in chronic dialysis patients in 2006 [5]. The guidelines presented new target ranges for serum calcium, phosphorus, and PTH levels based on the survival data of Japanese dialysis patients. Since then, the JSDT set an order of priorities for clinical management of serum calcium and

phosphorus levels and control of PTH level. During the five years since the publication of those guidelines, patients, physicians, and other medical professionals have gained knowledge of secondary hyperparathyroidism, allowing for better control of this condition [6].

Several international organizations have recommended different levels of serum calcium, albumin-corrected calcium, phosphorus, and PTH in patients undergoing dialysis [7]. Many regional nephrologists do not have guidelines by which to choose these levels because there are few well performed epidemiological studies showing associations between serum mineral values and patient outcomes in their countries. In Korea, the KDOQI and KDIGO guidelines are commonly used at present [2,3].

On the other hand, it is difficult to simply conform to other guidelines in Korea since our treatment strategies are guided by the National Health Insurance Service standards. To narrow the gap between reality and ideals, some Korean nephrologists have explored regional CKD-MBD management guidelines through adaptation of international recommendations [7–10]. The serum calcium and phosphorus levels in 1,018 Korean patients in 17 hemodialysis centers throughout the country were analyzed, showing that relatively few hemodialysis patients were within the KDOQI guideline target ranges for serum calcium (58.7%), phosphorus (51.0%), and PTH levels (30.8%) [8]. Then, Hwang et al [9] set up Korean regional guidelines for management of CKD-MBD for optimal treatment of hyperphosphatemia and secondary hyperparathyroidism.

In this issue of the Journal, Jin et al [10] examined whether their adapted domestic recommendations are feasible and valid for management of Korean mainte-

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nance hemodialysis patients. They performed a prospective interventional study for 1 year with 355 patients, and the primary endpoints of the study were improvement in the proportion of patients with serum mineral levels within the target ranges of the recommendations. The secondary endpoints were changes in serum mineral levels after introduction of the recommendations. Finally, although serum calcium, phosphorus, and PTH levels were not effectively controlled over a short period of time, the serum alkaline phosphatase (ALP) level was improved in these patients. The authors surmised that stabilization of serum ALP activity in patients with CKD-MBD would lead to amelioration of high turnover bone disease and possibly an improvement in mortality.

These results are encouraging because it is shown that a regional act is possible in performing clinical practice guidelines. Until recently, however, domestic data were not sufficient to support our guidelines for management of CKD-MBD. From the Korean Dialysis Registry Data, we may obtain evidence to support our recommendations. The present study [10] was conducted with only 355 patients who were followed up for 1 year. Thus, long-term follow-up evaluations with larger numbers of patients are required to determine whether these modifications can affect uremic bone disease and cardiovascular calcifications.

### Conflicts of interest

All authors have no conflicts of interest to declare.

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