Update in Hemodialysis

Benefits and Side-effects of Phosphorous Binders

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Hyperphosphatemia is prevalent in the end-stage kidney disease and contribute to secondary hyperparathyroidism, mineral-bone disease, and vascular calcification[1]. It is now widely accepted that hyperphosphatemia is an important contributory risk factor for cardiovascular disease and achieving normal phosphorus levels might improve prognosis. The key factors in the management of hyperphosphatemia are dietary restriction, adequate dialysis, and use of oral phosphate binders. Dietary phosphate restriction is impractical for many patients and can be restricted only certain extent without risk of protein malnutrition[2]. Dialysis, either conventional hemodialysis or peritoneal dialysis, also generally insufficient to achieve adequate phosphate level[3]. Thus, the majority of dialysis patients need oral phosphate binders to control their phosphate level. Nowadays, several phosphate binders such as calcium-based binders (acetate or carbonate), sevelamer, lanthanum, and so on, are available. All currently available oral phosphate binders work in a similar way-binding phosphate in the gastrointestinal tract, either by forming an insoluble complex or by binding it into a resin and all of these binders can control serum phosphate level to similar degrees. Aluminum-containing agents are highly efficient but no longer widely used because of aluminum toxicity[4]. Calcium-based binders (acetate or carbonate) are effective and inexpensive, but there is concerns about the long-term effects of calcium overload and its association with vascular calcification[5]. Sevelamer and lanthanum do not contribute to calcium loading. Sevelamer hydrochloride is associated with fewer adverse effects, but large pill burden, high cost, and unwanted binding to other substances are limiting factors to its wider use[6]. Lanthanum is another calcium-free phosphate binder and has advantage of low pill burden compared with sevelamer. However, there is concern about possible accumulation despite of very low systemic absorption[7]. All of oral phosphate binders seem to be safe for short-term use, but insufficient evidence exists to recommend one binder over another as first-line therapy. In this presentation, I would like to summarize the current available oral phosphate binders with respect to its relative merits and concerned issue for each oral phosphate binders.

References

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