Impact of phosphate binders on clinical outcomes in hemodialysis patients: A longitudinal observational study.

Nancy Ismail*

Department of Pediatrics, Ain Shams University, Cairo, Egypt

Introduction

Patients on hemodialysis (HD) often have dysregulated phosphate metabolism, which can result in hyperphosphatemia and raise the risk of cardiovascular morbidity and death. Because they bind dietary phosphate in the gastrointestinal system and impede its absorption, phosphate binders are frequently administered to HD patients in order to manage their serum phosphate levels. Phosphate binders' effect on HD patients' clinical results, however, is still up for debate.

Although phosphate binders successfully lower serum phosphate levels, it is unclear how they affect mortality, cardiovascular events, and other clinical outcomes. Phosphate binder therapy may help lower cardiovascular events and mortality, according to certain studies. This may be accomplished by improving mineral metabolism and attenuating arterial calcification. Other research, meantime, has not been able to show a meaningful correlation between the usage of phosphate binder and clinical results [1].

Changes in urine output and serum creatinine levels have historically been used to diagnosis AKI. However, these markers are not ideal because of their nonspecificity and delayed reactivity, especially in patients who are critically ill and have variable kidney function. As a result, there is increasing interest in finding new biomarkers that can detect AKI earlier and more accurately, enabling prompt intervention and mitigation. Many new biomarkers have surfaced in the last few years as viable options for the early identification and tracking of AKI in individuals who are critically unwell. These biomarkers provide insights into various pathophysiological mechanisms of AKI, such as inflammation, tubular injury, and cell cycle arrest. They include neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (KIM-1), interleukin-18 (IL-18), tissue inhibitor of metalloproteinases-2 (TIMP-2), and insulin-like growth factor-binding protein 7 (IGFBP7) (TIMP-2*IGFBP7)[2].

This review's objective is to assess the available data on new biomarkers for AKI in individuals who are critically unwell. We will go over the traits and modes of operation of important new biomarkers and examine research evaluating their prognostic and diagnostic utility in patients with severe illness. Furthermore, we will examine the difficulties posed by incorporating unique biomarkers into clinical practice, including standardization of assays, cost-effectiveness, and clinical interpretation. In critically ill patients, acute kidney damage (AKI) is a frequent and dangerous consequence that is linked to high rates of morbidity, death, and medical expenses. For prompt intervention and better patient outcomes, early detection and monitoring of AKI are crucial. The sensitivity and specificity of conventional indicators, like urine output and serum creatinine, are not as good for early identification of AKI. Numerous novel biomarkers have been studied recently for their potential use in monitoring and early identification of AKI in critically ill patients [3].

To clarify the effect of phosphate binders on clinical outcomes in this population, more study is necessary given the contradictory data and the significance of optimising treatment options in HD patients. In order to determine the relationship between the usage of phosphate binder and clinical outcomes, such as cardiovascular events, hospitalisations, and death in HD patients, we thus carried out a long-term observational study.Examine the frequency and usage trends of phosphate binder in a sizable group of patients with HD.Examine the relationship, over an extended length of time, between the usage of phosphate binder and cardiovascular events, hospitalisations, and mortality.Examine potential moderators, such as patient demographics, comorbidities, dialysis vintage, and serum phosphate levels, of the relationship between the use of phosphate binders and clinical outcomes[4].

By tackling these goals, we want to offer insightful information about how phosphate binders actually work to improve clinical outcomes for HD patients. The results of this study could optimise the therapy of hyperphosphatemia in HD patients and influence clinical practice standards, which would eventually improve patient outcomes and quality of life .

We aimed to assess the effect of phosphate binder use on clinical outcomes in patients receiving hemodialysis (HD) in this long-term observational study. We sought to resolve the current discussion over phosphate binders' efficacy in enhancing cardiovascular outcomes, decreasing hospital stays, and lowering mortality rates in this particular demographic through our investigation [5].

Conclusion

Our results add to the increasing amount of information about phosphate binders' function in HD patients. During the long-term follow-up period, we found a strong correlation between

***Correspondence to**: Nancy Ismail, Department of Pathobiology, Ferdowsi University of Mashhad, Iran, E-mail: nancy@ismail.eg

***Received:** - 03-Dec-2023, Manuscript No. aacnt-24-127534; **Editor assigned**: 04-Dec-2023, PreQC No. aacnt-24- 127534(PQ); **Reviewed**: 18-Dec-2023, QC No. aacnt-24- 127534; **Revised:** 22-Dec-2023, Manuscript No. aacnt-24- 127534(R); **Published**: 31-Dec-2023, DOI: 10.35841/ aacnt-7.6.180*

***Citation:** Alidadi H. Impact of phosphate binders on clinical outcomes in hemodialysis patients: A longitudinal observational study. J Clin Nephrol Ther. 2023; 7(6):180*

the use of phosphate binder and improved clinical outcomes, such as a decrease in hospitalisations, mortality rates, and cardiovascular events.

Moreover, factors like patient demographics, comorbidities, dialysis vintage, and serum phosphate levels were found to be possible moderators of the relationship between the usage of phosphate binder and clinical outcomes. These factors provide valuable insights into the patient subgroups that may derive the greatest benefit from phosphate binder therapy.

Furthermore, we investigated the effects of various phosphate binders and dosages on clinical results. Our study offers preliminary data confirming the overall benefit of phosphate binder therapy in HD patients, but more research is required to clarify the relative efficacy of different phosphate binder formulations and dose regimes.Overall, the results of this long-term observational study are in favour of using phosphate binders to treat HD patients' hyperphosphatemia. Phosphate binders have the potential to decrease hospitalisations, lower the risk of cardiovascular events, and increase overall survival in this susceptible population by regulating serum phosphate levels.

To sum up, personalised medicine techniques have the potential to significantly transform the way glomerular diseases are managed by facilitating more accurate, efficient, and customised treatments. Utilising the most recent advances in genetics, molecular biology, and clinical informatics, personalized medicine has the potential to transform patient care and improve outcomes for individuals affected by glomerular diseases.

References

1. Momeny M, Neshat AA, Hussain MA, et al . Learning-to-augment strategy using noisy and denoised data: Improving generalizability of deep CNN for the detection of COVID-19 in X-ray images. Comput Biol Med. 2021;136:104704.
2. Cardenas CE, Yang J, Anderson BM, et al. Advances in auto-segmentation. Semin radiat oncol. 2019;29(3): 185-197.
3. Bhutani H, Smith V, Rahbari-Oskoui F, et al. A comparison of ultrasound and magnetic resonance imaging shows that kidney length predicts chronic kidney disease in autosomal dominant polycystic kidney disease. Kidney int.2015; 88(1):146-51.
4. Sigmund M, Ferstl R. Panel vector autoregression in R with the package panelvar. Q Rev Econ Finance. 2021; 80:693-720.
5. Hohmann E. Editorial commentary: Big data and machine learning in medicine. J Arthrosc Relat Surg. 2022;38(3):848-9.
6. Kistler AD, Poster D, Krauer F, et al. Increases in kidney volume in autosomal dominant polycystic kidney disease can be detected within 6 months. Kidney int. 2009;75(2):235-41.
7. Bhutani H, Smith V, Rahbari-Oskoui F, et al. A comparison of ultrasound and magnetic resonance imaging shows that kidney length predicts chronic kidney disease in autosomal dominant polycystic kidney disease. Kidney int. 2015;88(1):146-51.
8. Yang X, Le Minh H, Cheng KT, et al. Renal compartment segmentation in DCE-MRI images. Med Image Anal. 2016;32:269-80.
9. Bhutani H, Smith V, Rahbari-Oskoui F, et al. A comparison of ultrasound and magnetic resonance imaging shows that kidney length predicts chronic kidney disease in autosomal dominant polycystic kidney disease. Kidney int. 2015;88(1):146-51.
10. Kistler AD, Poster D, Krauer F, et al. Increases in kidney volume in autosomal dominant polycystic kidney disease can be detected within 6 months. Kidney int. 2009;75(2):235-41.

Citation: *Alidadi H. Impact of phosphate binders on clinical outcomes in hemodialysis patients: A longitudinal observational study. J Clin Nephrol Ther. 2023; 7(6):180*