COSMOS: use of phosphate-binding agents is associated with a lower risk of mortality

Treatment with phosphate-binding therapy was associated with a lower all-cause and cardiovascular mortality risk in the European COSMOS observational study of hemodialysis patients.

Cannata-Andía et al. studied [1] almost 6,800 patients from 227 dialysis centers in 20 European countries over a three-year period. 85% of patients were prescribed phosphate binders, a similar proportion to the 88% reported in a recent DOPPS analysis. In multivariate analysis, patients prescribed binders had a 29% and 22% lower all-cause and cardiovascular mortality risk, respectively.

The findings from the COSMOS study provide further support for the results from two prior epidemiological studies:

- In 2009, Isakova et al. reported [2] on a one-year study of 10,000 incident dialysis patients. In this group, the investigators found a 25% reduction in all-cause mortality risk from phosphate binder use. In both Isakova et al. and COSMOS, the survival benefit also remained statistically significant in propensity-score matched cohorts.
- In 2012, Lopes et al. reported [3] a 25% reduction in mortality risk from phosphate binder prescription in the DOPPS cohort of maintenance dialysis patients with serum phosphorus concentrations ≥ 3.5 mg/dL. In a one-year analysis of a subgroup of incident dialysis patients (approximating the Isakova study), the authors observed an 18.7% lower mortality risk.

Two additional findings in the Lopes et al. study are also particularly relevant to COSMOS.

First, the survival impact of phosphate binder prescription at a facility level was similar between the two studies. With each 10% increase in the case-mix adjusted facility prescription of phosphate binders, Lopes et al. identified a 7% decrease in the relative all-cause mortality. COSMOS found an 8% reduction in all-cause mortality risk and a 7% reduction in cardiovascular mortality.

Second, Lopes et al. hypothesized that the survival advantage from phosphate binder use could partially be explained by better nutritional status in the treated cohort, as the inclusion of nutritional factors in the multivariate model attenuated the survival advantage. In COSMOS, as in the DOPPS study, patients prescribed phosphate binders were found to have better nutritional status than those not prescribed binders. However, in COSMOS the inclusion of BMI and albumin in the multivariate models did not modify the survival advantage. Cannata-Andía et al. suggest that a potential explanation for both of these findings is that phosphate binder prescription “may improve survival by allowing a more liberal diet and therefore improving nutritional status”.

One limitation of the COSMOS study, as with previous investigations, is the low percentage of patients not treated with phosphate binders in these studies. This limitation can be partially overcome by the large number of patients included in these epidemiological studies, as well as by analysis based on propensity-score matching, but it does restrict the robustness of the conclusions and provides an opportunity for further research to support the findings.

The COSMOS study also provided insight into the survival benefit associated with specific phosphate binders. We will assess these findings, along with those of a recent systematic review [4] published in The Lancet, in our next article.

REFERENCES

