

Digoxin use increases mortality in end-stage renal disease

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Despite the general prescription of digoxin for over 200 years, large studies have not been performed in order to examine the effectiveness and safety of the drug among patients on dialysis. The results of a retrospective cohort study, published in the *Journal of the American Society of Nephrology*, showed that digoxin use increased death risk in dialysis patients, especially in patients on higher doses.

This survey demonstrated an association between digoxin prescription and survival duration in a cohort of 120,864 patients receiving incident hemodialysis enrolled from more than 1800 clinics across North America and observed for up to 4 years. The investigators used covariate- and propensity score-adjusted Cox models in order to reduce the potential for confounding by indication.

The study results showed that digoxin use was associated with a 28% increased mortality risk (hazard ratio [HR] 1.28; 95% confidence interval [CI], 1.25 - 1.31). Increase in serum digoxin level was also a significant predictor of

death, with an HR of 1.19 per ng/mL increase (95% CI, 1.05 - 1.35). Patients with lower predialysis serum potassium levels had the strongest association of increased mortality with digoxin level (HR, 2.53 [P = .01] for potassium level < 4.3 mEq/L vs HR, 0.86 [P = .35] for potassium level > 4.6 mEq/L).

There were some limitations of the study: retrospective observational design, use of clinical surveillance data, potential unmeasured confounders, and information bias from misclassification.

Study conclusion was that digoxin use among patients who are on hemodialysis associates with increased mortality, especially among those with low predialysis potassium. However, further research is needed to define how and if digoxin can be safely prescribed in patients on hemodialysis, suggesting that therapeutic options other than digoxin may be considered for heart disease in patients starting dialysis. To reduce drug's possible adverse effects, carefully monitoring of digoxin and potassium blood levels should be done. □

Comment on a paper:

Laurie Barclay – Digoxin Use Linked to Mortality in End-Stage Renal Disease. *J Am Soc Nephrol* Published online June 24, 2010