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Epoetin requirements predict mortality in hemodialysis patients.

Zhang Y[1], Thamer M, Stefanik K, Kaufman J, Cotter DJ.
Author information

Abstract

BACKGROUND:

Anemia is a frequent complication of end-stage renal disease. Poor responsiveness to epoetin therapy hampers the management of anemia. Escalating epoetin doses often are used to overcome epoetin resistance. The objective of this study is to examine the relationship between epoetin dose requirements and mortality.

METHODS:

Using United States Renal Data System administrative claims data, we conducted a retrospective cohort study of 94,569 prevalent hemodialysis patients in 2000 and 2001. A Cox proportional hazard regression analysis, adjusted for baseline variables, and a 5-knot cubic regression spline were used to model the dose-response relationship between epoetin and all-cause mortality.

RESULTS:

Significant interpatient variation exists in epoetin dose requirements to attain defined hematocrit levels. For every hematocrit cohort studied, patients administered higher doses of epoetin had significantly lower hematocrit values and greater mortality rates. Using the cubic spline function, a significant nonlinear relationship between increased epoetin dose and mortality was found regardless of hematocrit ($P < 0.0001$), with the steepest increase in relative risk for death found after the 72.5th dose percentile.

CONCLUSION:

Epoetin dose requirement is an independent predictor of total mortality in hemodialysis patients after adjustment for hematocrit. Poor responders who continue to have low hematocrit values despite the administration of high epoetin doses may not necessarily benefit from more epoetin, but perhaps should be considered for other adjunctive therapies. In contrast to conventional wisdom, this study suggests that epoetin dosing requirements could provide important prognostic information beyond that predicted by hematocrit alone.