Association of Cumulative Dose of Erythropoietin over 3 Years and Survival in Maintenance Hemodialysis Patients

Elani Streja, MPH[1]; Csaba P. Kovesdy, MD[2]; Allen R. Nissenson, MD, FACP, FASN[3]; and Kamyar Kalantar-Zadeh, MD, MPH, PhD*[1]

(1)Harold Simmons Center for Kidney Disease Research & Epidemiology, LABioMed at Harbor-UCLA, Torrance, CA; (2)Salem VA MC, Salem; (3)DaVita Inc., Lakewood, CO

INTRODUCTION

Observational studies have consistently shown that higher erythropoietin (EPO) dose appears to be associated with higher death risk in maintenance hemodialysis (MHD) patients.

These findings may be due to the confounding by medical indication.

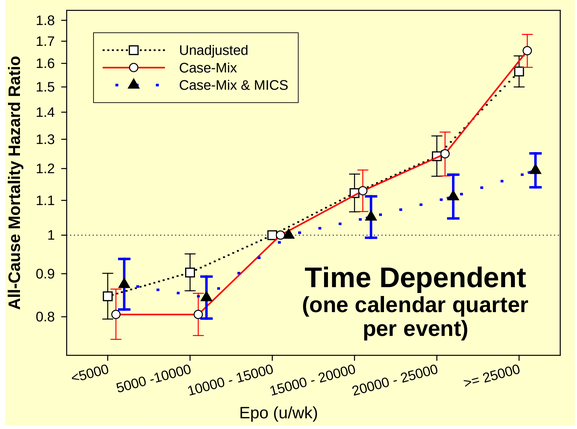
The mortality-predictability of cumulative dose of EPO over a relatively long period of time is not clear.

METHODOLOGY

- After excluding those who did not receive any EPO during any calendar quarter, we examined the 3-yr (7/2001-6/2004) cohort of 56,656 MHD patients in DaVita® clinics.
- Patients' survival were followed up to 6/2006, using Cox regression at 3 levels of unadjusted, adjusted for case-mix and adjusted also for surrogates of Malnutrition-Inflammation Complex Syndrome (MICS).
- We compared time-dependent model, which is based on the EPO dose in the last calendar quarter prior to the event, and time-averaged model, which is based on the cumulative EPO dose over the entire 3 years.

RESULTS

Figure 1. Time Dependent All-Cause Mortality Hazard Ratio Across Erythropoietin Dose Increments



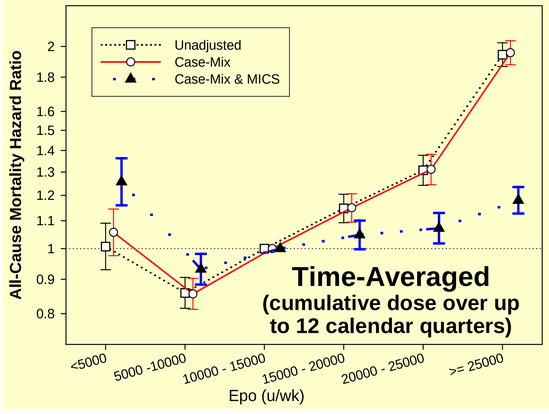


Figure 2. Time-Averaged All-Cause Mortality Hazard Ratio Across Erythropoietin Dose Increments

CONCLUSIONS

- Patients were 61.1±15.4 yrs old and included 46% women and 46% diabetics.
- In fully adjusted models, across 6 EPO dose increments, the 2 lowest EPO dose groups (<5,000 and 5,000 to <10,000 u/wk) appeared associated with the greatest survival (reference group: 10,000-<15,000 u/wk) (Figure 1).
- However, when cumulative EPO dose over 3 years was modeled, having received <5,000 u/wk cumulatively exhibited the worst mortality (hazard ratio [HR]: 1.26, 95% confidence interval [CI]: 1.16-1.36), whereas the EPO dose group of 5,000 to <10,000 u/wk had the greatest survival (HR: 0.93, 95% CI: 0.88-0.98) (Figure 2).
- There was no significantly increased death risk for cumulative EPO dose up to15,000 u/wk (Figure 2).

KEY LEARNINGS

✓ Cumulative EPO doses <5,000 u/wk over 3 years is associated with highest death risk over 5 years of observation.

We thank the patients who participated in this study and DaVita Clinical Research® (DCR) for support in preparing this poster. DCR is committed to advancing the knowledge and practice of kidney care.

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*Correspondence: kamkal@ucla.edu