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**Clinical impact of erythropoiesis-stimulating agents on anemia in patients with acute kidney injury requiring renal replacement therapy**

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**Objectives:** Anemia is common in acute kidney injury (AKI) patients and often requires red blood cell (RBC) transfusion. Allogeneic RBC transfusion inherently bears the risk of complications such as transmission of infections or transfusion reaction. Although erythropoiesis-stimulating agents (ESAs) are widely used in chronic kidney disease (CKD) patients with anemia, benefits of ESA in AKI patients remains unclear. We investigated the effect of ESA on RBC transfusion requirements in AKI patients undergoing renal replacement therapy (RRT).

**Methods:** A total of 1777 adult AKI patients who received RRT from 2007 to 2017 at Samsung Medical Center were included in the final analyses. The primary outcome was the amount of RBC transfusion (units).

**Results:** Median (interquartile range) age was 63 (53-72) years and 63.1% were male. Among 1777 patients, 588 (33.1%) patients received ESA (ESA group) and 897 (50.5%) patients received continuous renal replacement therapy (CRRT). The amount of RBC transfusion was significantly less in the ESA group compared to the control (non-ESA) group [median (IQR): control vs. ESA groups, 17 (5-44) vs. 10 (3-31)units,  $p < 0.001$ ]. In a multivariable analysis, ESA treatment ( $\beta = -3.986$ ,  $p = 0.053$ ), age ( $\beta = -0.460$ ,  $p < 0.001$ ), initial hemoglobin ( $\beta = -0.675$ ,  $p < 0.001$ ), and CRRT ( $\beta = 25.501$ ,  $p < 0.001$ ) were predictive factors for the amount of RBC transfusion. ESA treatment was associated with lower mortality compared to the control group (adjusted hazard ratio 0.520, 95% confidence interval 0.435-0.621,  $p < 0.001$ ).

**Conclusions:** ESA treatment in AKI patients requiring RRT was beneficial for reducing RBC transfusion and was associated with lower mortality. These results suggest that ESA should be considered when managing anemia in patients with severe AKI.