Possible Inhibitory Effect of Erythropoiesis-stimulating Agents From Pre-dialysis Stage on Early-phase Coronary Events After Hemodialysis Initiation

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Objectives:

We examined whether use of erythropoiesis-stimulating agent (ESA) from pre-dialysis stage to correct anemia could inhibit early-phase coronary events after hemodialysis initiation.

Methods:

We enrolled 242 patients with chronic kidney disease who had received continued medical treatments and initiated maintenance hemodialysis from September 1, 2000 to December 31, 2014 in Toujinkai Hospital. Patients with previous history of blood transfusion or any cardiovascular events or interventions were excluded. The coronary events were followed for one year after initiation of hemodialysis.

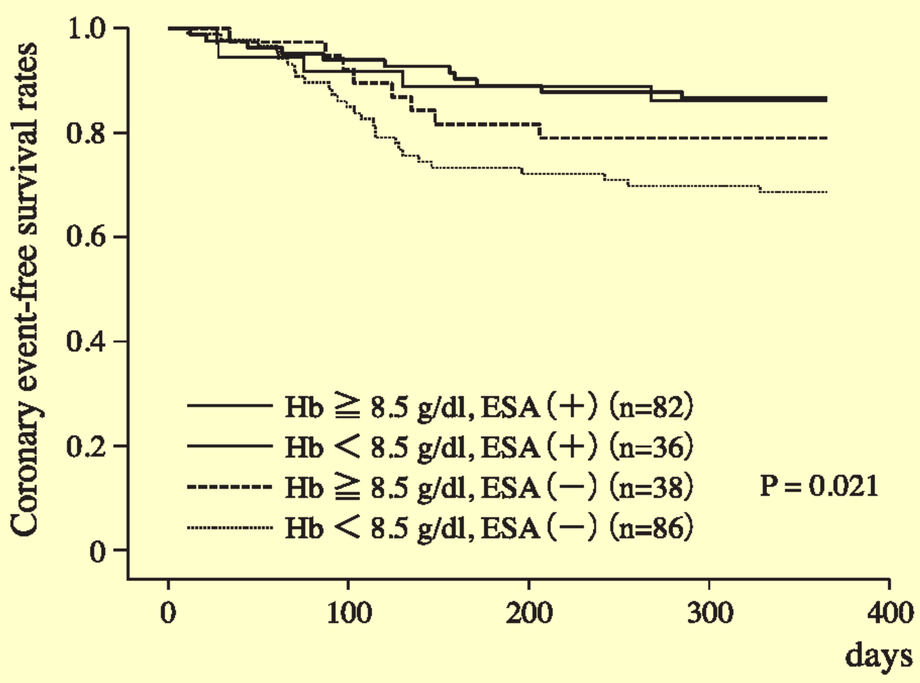

Figure 1. Coronary event-free survival rates within one year after hemodialysis initiation among patients divided into four subgroups by blood hemoglobin (Hb) concentration at hemodialysis initiation (8.5 g/dl) and use/nonuse of erythropoiesis-stimulating agent (ESA)
in Kaplan-Meier analysis.

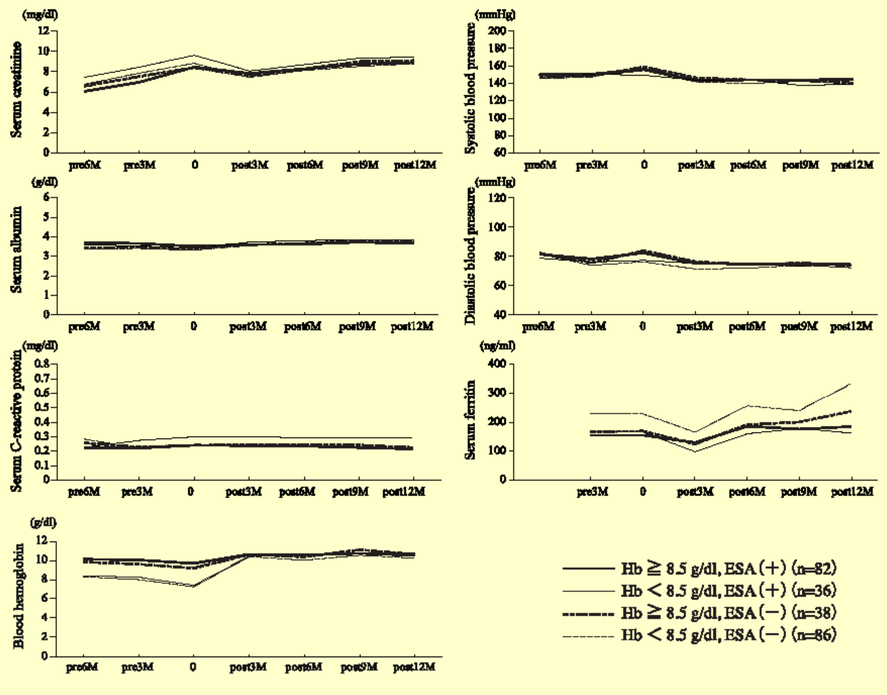

Figure 2. Profiles of changes in blood pressure, blood hemoglobin (Hb), and serum concentrations of creatinine, albumin, C-reactive protein, or ferritin during the study period among patients divided into four subgroups by blood Hb concentration at hemodialysis initiation (8.5 g/dl) and use/nonuse of erythropoiesis-stimulating agent (ESA).

Results:

1. Coronary events occurred in 51 of 242 patients (21%) within one year after hemodialysis initiation: 10 acute coronary syndrome (9 with percutaneous coronary intervention (PCI), 1 without intervention) and 41 elective coronary revascularization (38 PCI, 3 coronary artery bypass graft).
2. ESA was administered in 118 of 242 patients (48.8%).
3. In stepwise logistic analysis, coronary events were inversely associated with use of ESA from pre-dialysis stage (Odds ratio 0.376, $P = 0.005$) and positively with diabetes mellitus (Odds ratio 5.330, $P < 0.001$).
4. When the patients were divided into four subgroups by blood Hb level (8.5 g/dl) and use/nonuse of ESA, coronary event-free survival rates were higher ($P = 0.005$) in Hb ≥8.5 g/dl, ESA (+) (86.6%, n = 82) and tended to be higher ($P = 0.055$) in Hb <8.5 g/dl, ESA (+) (86.1%, n = 36) than in Hb <8.5 g/dl, ESA (-) (68.6%, n = 86) in Kaplan-Meier analysis.

Conclusions:

Use of ESA to correct anemia from pre-dialysis stage may inhibit early-phase coronary events after hemodialysis initiation.

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