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Renal anemia in Korean dialysis patients & The role of iron replacement therapy

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Anemia is a common complication in chronic kidney disease and end stage renal disease patients. According to the 2020 Korean dialysis patient registry report of the Korean Society of Nephrology, mean hemoglobin values are 10.3 ± 1.2 g/dL and 10.2 ± 1.5 g/dL in hemodialysis (HD) and PD (peritoneal dialysis), respectively. The proportion of using an erythropoiesis-stimulating agent (ESA) was 85.4% for HD and 70% for PD. It is important to properly control renal anemia because it can cause poor outcomes, including decreased quality of life, left ventricular hypertrophy, and mortality in dialysis patients.

In our recent multicenter study in Korea, the lower hemoglobin (Hb) target (Hb < 10 g/dL) ratio was higher in the group with higher Hb variability. In multivariable analysis, including Kt/V, iron dose, RBC transfusion frequency, and ESA dose, the greater the Hb variability, the significantly increased anemia. Hemoglobin levels in patients with dialysis fluctuate frequently above or below the recommended target levels even though the calculated mean hemoglobin remains within the target range. In a previous study conducted using the USRDS data, only 10% of patients maintained Hb levels (target-Hb group: Hb 11.0-12.5 g/dL) within a single Hb category during the entire 6-mo period. In another study also showed that although Hb distribution among the three groups remained consistent, only 33% of patients starting in the low-Hb group (Hb <11 g/dL), 55% of patients starting in the mid-Hb group (Hb 11 to <12.5 g/dL), and 43% of patients starting in the high-Hb group (Hb ≥12.5 d/L) were still in those groups after 3 months. Since Hb variability is associated with patient mortality, it will be important to maintain the target range of Hb and reduce variability. Several factors affect Hb variability, including those that are drug-related, such as pharmacokinetic parameters, patient-related differences in demographic characteristics, and factors affecting clinical status, as well as clinical practice guidelines, treatment protocols, and reimbursement policies. Iron deficiency, such as a result of ESA treatment-related increase in hematopoiesis or functional iron deficiency due to pro-inflammatory cytokines, also affects Hb variability. There are several strategies, including more frequent Hb monitoring, fine-tuned changes in ESA and/or iron dosage, and optimal management of hyperparathyroidism, to reduce Hb variability. Maintenance iron supplementation during ESA treatment and avoidance of iron-ESA dosage discrepancy are

also important strategies to reduce Hb variability.

Iron replacement therapy is important as well as ESA treatment in the control of renal anemia. When iron replacement is adjusted, it is good to be fine-tuned to reduce fluctuations. Intravenous iron preparations are recommended in many guidelines. Intravenous iron improves higher in iron parameters compared to oral iron, but attention should be required to the occurrence of adverse events. Traditional oral agents have been insufficiently effective due to poor absorption and gastrointestinal adverse events. Novel oral iron agents could be a helpful option.