Anemia in Diabetic Mellitus Type II with Moderate Renal Impairment

Tanaya Siripoon\textsuperscript{1} \quad Nisa Makruasi\textsuperscript{4}
Rutchaporn Taweerutchana\textsuperscript{2}

\textsuperscript{1}Division of Hematology, Department of Medicine, Faculty of Medicine, HRH Princess Maha Chakri Sirindhorn Medical Center, Srinakharinwirot University, Nakhon Nayok 26120, Thailand. \textsuperscript{2}Division of Endocrinology and Metabolism, Department of Medicine, Faculty of Medicine, HRH Princess Maha Chakri Sirindhorn Medical Center, Srinakharinwirot University, Nakhon Nayok 26120, Thailand.

Background: Anemia is a common problem in type 2 diabetic mellitus (DM) patients. The prevalence of anemia is predominant in type 2 DM patients with moderate renal impairment (GFR 15-59 ml/min/1.73m\textsuperscript{2}) more than those with moderate renal impairment without type 2 DM. However, several factors previously reported to cause anemia include diabetic retinopathy (DR), diabetic nephropathy (DN), erythropoietin resistance, obesity, and hyperglycemia. Identifying factors related to anemia may improve outcomes in these patients.

Objective: To determine the prevalence of anemia in type2 DM with moderate renal impairment, and to investigate factors associated with anemia.

Methods: This was a retrospective study. Medical records between 2009 and 2014 of 699 type2 DM patients at Her Royal Highness (HRH) Princess Maha Chakri Sirindhorn Medical Center were reviewed. The level of hemoglobin (Hb) less than 11 g/dL was diagnosed as anemia.

Results: From 699 medical records, 120 patients were included in the study. The prevalence of anemia in type 2 DM with moderate renal impairment was 17.7%. The median age of patients was 62.3 years (43-86). Fifty seven patients were female (47.5%), and 63 patients (52.5) were male. There were 115 (95.8%) and 112 (93.3%) patients having co-morbidities with hypertension and dyslipidemia, respectively. The complications of type 2 DM were DN 92 (76.7%) and DR 15 (12.5%). The mean Hb was 12.4 g/dL (8.9-17.6). The mean GFR was 48.5 ml/min/1.73m\textsuperscript{2} (15.6-59.9). The number of 29 patients (24.2%) had Hb less than 11 g/dL. The multivariate analysis confirmed a significant association with female (p<0.05) and DR (p=0.03) associated with anemia.

Conclusion: The prevalence of anemia is 17.7%. Female gender and DR are factors associated with anemia in type 2 DM with moderate renal function.

Keywords: Anemia in diabetic mellitus, Anemia of chronic inflammation, Diabetic mellitus type2, Renal impairment