Summary

Anemia is very common in diabetic kidney disease. Its occurrence and severity increases with the deterioration of kidney function. The occurrence of anemia worsens physical condition, quality of life, increases kidney damage, increases the risk of cardiovascular incidents and the risk of death. The pathogenesis of anemia in diabetic kidney disease is a multifactorial process. Iron deficiency is one of the major causes causing anemia in diabetic kidney disease. Iron deficiency is caused by, among other things, increased blood loss, impaired absorption of iron from the gastrointestinal tract, and iron retention in the reticuloendothelial system. Bone marrow aspiration biopsy is considered the best diagnostic method for iron deficiency in chronic kidney disease, but due to the invasiveness of the test this method is not used in daily practice. Therefore, non-invasive and effective methods are needed to assess iron deficiency. Determination of optimal iron level for normal erythropoiesis is important to avoid adverse consequences of anemia, and on the other hand it protects against iron overload.

The aim of this study is to evaluate selected factors involved in iron metabolism in diabetic kidney disease.

The study comprised 80 patients with type 2 diabetes mellitus and 23 healthy volunteers as control group. In both groups of patients basic laboratory results (complete blood count, inflammatory parameters, electrolytes) as well as concentration of hepcidin, HIF1-alpha, GDF-15, sTfR, iron and ferritin were determined from blood taken from peripheral vein. BNP and lipid levels were additionally determined in the study group. Patients in the study group were divided into two groups according to their eGFR values. Group one included patients with eGFR < 60 ml/min/1.73 m2, and group two included patients with eGFR ≥ 60 ml/min/1.73 m2. Patients in the study group had significantly higher levels of hepcidin, sTfR and GDF-15 and lower levels of iron and hemoglobin compared to the control group. Subjects in the study group with an eGFR value ≥ 60 ml/min/1.73 m2 had higher hemoglobin, ferritin, and HIF-1 alpha levels and lower BNP levels, and were younger compared with subjects with an eGFR < 60 ml/min/1.73 m2. We could not find statistically significant differences in iron parameters between patients with eGFR ≥ 60 ml/min/1.73 m2 and < 60 ml/min/1.73 m2, except for ferritin and HIF-1alpha. In the study group, hepcidin was significantly associated with iron parameters in a linear regression model. The results of our study suggest that the studied biomarkers of iron metabolism are not generally associated with renal function. Therefore, further studies are needed to evaluate the mechanism responsible for iron metabolism in diabetic kidney diseas