

Management of IDA in Chronic Kidney Disease

CKD is a progressive disease that gradually impairs kidney function, usually over a period of years. According to the National Kidney Foundation (NKF), approximately 8 million people in the US are living with moderate (stage 3) or severe (stage 4) CKD and are not yet receiving dialysis.¹ CKD often progresses to end stage renal disease (ESRD), where the kidneys fail and renal replacement therapy such as dialysis or transplantation is required to sustain life. The primary goal of treatment for CKD is to slow the progression of the disease, mainly by controlling the underlying common causes: hypertension and/or diabetes. Patients with CKD suffer from a myriad of complications, which may also effect CKD progression. These include malnutrition, bone disease and iron deficiency anemia.

Iron deficiency anemia is a significant complication of CKD, developing early in the course of the disease and progressing with loss of renal function.²⁻³ Published data indicate that approximately 44% of patients with CKD stage 3 or 4 are anemic (defined as Hb <13.5 g/dL for men and Hb <12.0 g/dL for women), and the prevalence of anemia increases to 75% in patients reaching CKD stage 5 (ESRD).¹ The cause of this anemia is multi-factorial, and includes the inability of the failing kidney to produce enough erythropoietin to stimulate adequate hematopoiesis, iron deficiency, and shortened red blood cell survival. Iron deficiency is a common cause of anemia in CKD patients. Iron deficiency and iron deficiency anemia can be due to both poor nutrition and blood loss, and can be exacerbated by the use of erythropoietic stimulating agents (ESAs). ESA therapy depletes iron stores as iron needs are increased in order to produce iron-containing red blood cells (RBCs). The DRIVE study that showed IV iron potentiates the response to ESAs even when the patients had normal or elevated ferritin and TSAT >25%.

Left untreated, anemia can have adverse effects on cardiac function, CKD progression, and survival.⁴⁻⁷ Anemia has also been shown to be an independent

predictor and risk multiplier for increased mortality in CKD patients who have not progressed to ESRD. Patients diagnosed with CKD and anemia have a risk of death that is equivalent to that in patients diagnosed with both diabetes and congestive heart failure combined.⁵⁻⁸ Treatment of iron deficiency anemia in CKD stages 1 through 4 may be critical to reducing this cardiovascular morbidity and mortality, since anemia-associated left ventricular hypertrophy may be irreversible if therapy is delayed until the beginning of dialysis.⁹

Evidence suggests that aggressive treatment of iron deficiency anemia early in the course of CKD can improve quality of life (QOL) as well as disease outcome, and may possibly slow the progression of renal failure.¹⁰⁻¹³

November 2013

References

1. National Kidney Foundation. KDOQI clinical practice guidelines and clinical practice recommendations for anemia in chronic kidney disease. *Am J Kidney Dis.* 2006; 47(suppl 3):S1-S145.
2. Astor BC, Muntner P, Levin A, Eustace JA, Coresh J. Association of kidney function with anemia. *Arch Intern Med.* 2002;162:1401-1408.
3. Kazmi WH, Kausz AT, Khans, et al. Anemia: an early complication of chronic renal insufficiency. *Am J Kidney Dis.* 2001;38(4): 803-812.
4. Snively CS, Gutierrez C. Chronic kidney disease: prevention and treatment of common complications. *Am Fam Physician.* 2004;70: 1921-1928.
5. Locatelli F, Aljama P, Barany P, et al. Revised European best practice guidelines for the management of anaemia in patients with chronic renal failure. *Nephrol Dial Transplant.* 2004;19(suppl):1-47
6. Astor BC, Coresh JC, Heiss G, Pettitt D, Sarnak MJ. Kidney function and anemia as risk factors for coronary heart disease and mortality: the Atherosclerosis Risk in Communities (ARIC) study. *Am Heart J.* 2006;151(2):492-500.
7. Collins AJ. The hemoglobin link to adverse outcomes. *Adv Stud Med.* 2003;3(3C):S194-S197.
8. McClellan WM, Flanders WD, Langston RD, Jurkowitz C, Presley R. Anemia and renal insufficiency are independent risk factors for death among patients with congestive heart failure admitted to community hospitals: a population-based study. *J Am Soc Nephrol.* 2002;13:1928-1936.



IRON CORNER

10. Al-Ahmad A, Rand WM, Manjunath G, et al. Reduced kidney function and anemia as risk factors for mortality in patients with left ventricular dysfunction. *J Am Coll Cardiol.* 2001; 38(4):955-962.
11. Tarrg D. Cardio renal anemia syndrome in chronic kidney disease. *J Chin Med Assoc.* 2007; 70(10): 424-429.
12. Fink JC, Blahut SA, Reddy M, Weir MR. Use of erythropoietin before the initiation of dialysis and its impact on mortality. *Am J Kidney Dis.* 200; 37: 348-355.
13. Gouva C, Nikolopoulos P, Ioannidis JP, Siamopoulos KC. Treating anemia early in renal failure patients slows the decline of renal function: a randomized controlled trial. *Kidney Int.* 2004;66:753-760.

Disclaimer

This content is covered by an important disclaimer that can be found at www.iron.sabm.org. Please read this disclaimer carefully before reviewing this content.