Summary

Chronic kidney disease is a growing health problem. Recognition of this condition is crucial to slow the progression to ESRD and reduce the associated complications. GFR is the best measure of kidney function so CKD is classified into 5 stages according to GFR.

There are many risk factors for development of CKD such as diabetes mellitus, hypertension, smoking, atherosclerotic vascular diseases, old age, chronic use of NSAIDs, obesity and low socioeconomic status.

Anemia is a frequent complication of CKD which is mainly due to decreased erythropoietin production by renal tubules also it may be caused by chronic blood loss, nutritional deficiency (iron, folate, vitamin B12 and L.carnitine), hyperparathyroidism, hypothyroidism, inflammatory mediators, inhibitory uremic toxins and reduced RBCs survival by hemolysis or hypersplenism.

50% of patients with CKD stage 3,4 are anemic while 75% of patients with CKD stage 5 are anemic. Anemia of CKD is presented by decreased quality of life, increased incidence of cardiovascular diseases, reduced survival and decreased economic status of patients. Anemia of CKD can be diagnosed by its clinical status and laboratory investigations including (assessment of Kidney function, C.B.C, evaluation of iron status, folate and vitamin B12)

Treatment of anemia of CKD is necessary to improve all clinical presentation. In the past treatment of anemia of CKD is by repeated blood transfusion and androgen therapy which have several adverse effects.

Now rHuEPO is the main line of treatment. Adjuvant therapy to rHuEPO includes iron supplementation, vitamin B6, vitamin B12, folic acid, ascorpic acid, vitamin E, L.Carnitine and treatment of secondary hyperparathyroidism with active vitamin D or parathyroidectomy.

New treatment of anemia of CKD include novel ESAs and new iron preparations. Novel ESAs include darbepoetin α, Continuous erythropoiesis receptor activator, Synthetic erythropoiesis protein, EPO infusion protein, Haemopoietic cell phosphatase inhibitors, Hypoxia induciale factor-Prolyl hydroxylase inhibitors, EPO gene therapy and EPO mimetics.

New iron preparations include ferumoxytol, iron oligosaccharide and dialysate iron therapy.

Pure red cell aplasia is a rare severe isolated anemia which is associated with complete absence of RBCs precursor in the bone marrow. It is caused by neutralizing anti epo antibodies. It can be treated by corticosteroid, I.V. immunoglobulin, immunosuppressive drugs and plasmapharesis. Hematide which is synthetic PEGylated peptide based ESA also can be used in the treatment of pure red cell aplasia.