ETIOLOGICAL PROFILE OF 50 CASES OF ANAEMIA IN CKD

Yalavarthi Hema Choudary
Junior Resident, Department of General Medicine, Siddhartha Medical College, Gunadala, Vijayawada, Andhra Pradesh, India-520008.

E. Karthik
Junior Resident, Department of General Medicine, Siddhartha Medical College, Gunadala, Vijayawada, Andhra Pradesh, India-520008.

Ch. Sudhakar*
Associate professor, Department of General Medicine, Siddhartha Medical College, Gunadala, Vijayawada, Andhra Pradesh, India-520008. *Corresponding Author

INTRODUCTION:
Anaemia is an important and common complication experienced by patients with CKD. When present it may cause symptoms such as fatigue and shortness of breath. In patients with CKD, anaemia is defined as the situation in which the concentration of haemoglobin (Hb) in the blood is below 2 times the SD of the mean Hb of the general population. As the pathogenesis of anaemia in CKD is multifactorial, this study is intended to know various etiological factors responsible for anaemia in CKD patients.

METHODS:
This study comprises 50 cases of CKD with anaemia, admitted to Government General Hospital, Vijayawada, Krishna District, Andhra Pradesh between August 2019 to January 2020. Case selection was random with respect to age and sex.

Inclusion Criteria:
1. The study comprises CKD patients with anaemia presented to Government General Hospital, Vijayawada.

Exclusion Criteria:
1. Patients with known haematological abnormalities.
2. Patients with any other known chronic disease like arthritis, chronic liver disease, autoimmune diseases etc.

INVESTIGATIONS:
All patients were investigated routinely for complete blood picture (Hb%, RBC, WBC, TC, DC, platelet count and ESR) with peripheral smear. Screening of urine for RBC, Albumin, Sugar, Microscopy and stool for Microscopy and occult blood was done.

RESULTS:
50 cases of anaemia in CKD, anaemia of chronic disease due to erythropoietin deficiency was the most common cause followed by iron deficiency anaemia. Usually clinical examination and routine simple investigations will clinch the diagnosis in most of the cases.

CONCLUSION:
Anaemia is an important and common complication experienced by patients with CKD. When present it may cause symptoms such as fatigue and shortness of breath. In patients with CKD, anaemia is defined as the situation in which the concentration of haemoglobin (Hb) in the blood is below 2 times the SD of the mean Hb of the general population. As the pathogenesis of anaemia in CKD is multifactorial, this study is intended to know various etiological factors responsible for anaemia in CKD patients.

Keywords: Anaemia, Haemoglobin (Hb), Chronic kidney disease (CKD), Iron, Erythropoietin (EPO), Hepcidin.

ORIGINAL RESEARCH PAPER

General Medicine

ABSTRACT

Background And Objectives: Anaemia is a common and significant complication of chronic kidney disease (CKD). When present it may cause symptoms such as fatigue and shortness of breath. It is associated with reduced quality of life and increased cardiovascular disease, hospitalizations, cognitive impairment and mortality. As kidney disease progresses, anaemia increases in prevalence affecting nearly all patients with stage V CKD. In patients with CKD, anaemia is defined as the situation in which the concentration of haemoglobin (Hb) in the blood is below 2 times the SD of the mean Hb of the general population. As the pathogenesis of anaemia in CKD is multifactorial, this study is intended to know various etiological factors responsible for anaemia in CKD patients.

Methods: 50 patients who met with inclusion criteria and exclusion criteria are subjected to detail clinical examination and investigations. Depending upon data obtained, results are evaluated and the percentage of various types of anaemia in CKD was calculated.

Results: At the end of study, anaemia of chronic disease (60%) constitutes the commonest cause of anaemia in CKD, followed by iron deficiency anaemia (30%) and megaloblastic anaemia (10%) due to vitamin B12 deficiency.

Conclusion: Among 50 cases of anaemia in CKD, anaemia of chronic disease due to erythropoietin deficiency was the most common cause followed by iron deficiency anaemia. Usually clinical examination and routine simple investigations will clinch the diagnosis in most of the cases.

Keywords: Anaemia, Haemoglobin (Hb), Chronic kidney disease (CKD), Iron, Erythropoietin (EPO), Hepcidin.
a measure of circulating iron. Plasma total iron bound to transferrin varies from 2 to 4 mg, whereas the daily need for iron in bone marrow is much higher, necessitating rapid turnover of iron from tissue stores and transport to the bone marrow. In the general population, either serum ferritin concentration < 30 ng/mL or TSAT < 15% are strongly suggestive of iron deficiency. However, both iron tests tend to be inaccurate for the diagnosis of iron deficiency in patients with CKD. The results of both tests reflect not only iron status, but also other factors that limit the ability to gauge iron status. In haemodialysis patients, there is no level of either test that optimizes both sensitivity and specificity. Among haemodialysis patients, iron deficiency is likely with serum ferritin concentration < 300 ng/mL or TSAT < 20%. In non-dialysis-dependent CKD, iron deficiency is probably present with serum ferritin concentrations < 100 ng/mL or TSAT < 15%. However, it must be recognized that iron deficiency may still be present in both populations with considerably higher values of either test.

DISCUSSION:
Anaemia of CKD is a multifactorial process due to relative EPO deficiency, uraemic-induced inhibitors of erythropoiesis, shortened erythrocyte survival, and disordered iron homeostasis. Recent work has identified hepcidin excess as a main contributor to the disordered iron homeostasis and anaemia of CKD by impairing dietary iron absorption and iron mobilization from body stores. CKD patients have increased iron losses, estimated at 1–3 g per year in haemodialysis patients, due to chronic bleeding from uraemia-associated platelet dysfunction, frequent phlebotomy, and blood trapping in the dialysis apparatus. CKD patients, particularly haemodialysis patients, also have impaired dietary iron absorption.

In addition to true iron deficiency, many CKD patients have functional iron deficiency, characterized by impaired iron release from body stores that is unable to meet the demand for erythropoiesis (also called reticuloendothelial cell iron blockade). These patients have low serum transferrin saturation (a measure of circulating iron) and normal or high serum ferritin (a marker of body iron stores). Improving our understanding of the molecular mechanisms of the disease for anemia decreases adverse outcome.

CONCLUSION
Anemia is a common feature of CKD associated with poor outcomes. The current management of patients with anemia in CKD is controversial, with recent clinical trials demonstrating increased morbidity and mortality related to erythropoiesis stimulating agents. Here we examine recent insights into the molecular mechanisms underlying anemia of CKD. These insights hold promise for the development of the new diagnostic tests and therapies that directly target the pathophysiologic processes underlying this form of anemia.