Prevalence Of Anemia In Dialysis Patients: Audit Of A Dialysis Center.

Tariq Saeed Chaudry
Alshaukat kidney Center
Lahore, Pakistan

ABSTRACT
Anemia is the most common hematological abnormality in chronic kidney disease (CKD) patients. Prevalence of anemia increases with falling kidney function. Anemia poses major health and cardiovascular risks in CKD patients. We conducted a study in our dialysis unit to evaluate prevalence of anemia in CKD-V-D patients. A total of 20 patients were evaluated among which 9 (45%) had hemoglobin less than the recommended levels. Anemia was found to be more prevalent in female patients (25%) as compared to male patients (20%). The major contributory factors of anemia in our population are inadequate dialysis and poor compliance to medication because of low affordability.

Key words: *Anemia, erythropoietin, chronic kidney disease.*

Correspondence to

Dr Tariq Saeed Chaudry
Consultant Nephrologist
Al-Shaukat Medical & Kidney Center
91-K, model Town, Link Road, Lahore, Pakistan.

PJKD 2019;(9):139-142

INTRODUCTION

Anemia is the most common hematological problems that is faced by nephrologists while managing the patients of chronic kidney disease (CKD) [1]. One of the important function of kidney is production of erythropoietin which is important for hemopoiesis. As the kidney function deteriorates and glomerular filtration rate (GFR) falls below 30ml, erythropoietin production is decreased resulting in anemia [2]. There is still a debate on optimal levels of hemoglobin (Hb) required in CKD but majority of clinicians and trials favor a level of 10 – 12 mg/dl . KDIGO (kidney disease improving global outcomes) advocates regular monitoring of Hb levels in CKD patients and appropriate interventions for achieving target levels [5]. We conducted a study in our dialysis unit to evaluate the prevalence of anemia in our population. It is small study but does reflect the overall position in our CKD-V-D (chronic kidney disease stage five on hemodialysis) patients.

RESULTS

It was a cross sectional study in which 20 patients were evaluated. The cut off value used for anemia was 10mg/dl. The mean age of patients was 57 years. Among these majority (60%; n = 12) were male. The prevalence of anemia was found to be 45% (n = 9). Anemia was more prevalent in female patients (25%) as compared to male patients (20%) (Table 1). All these patients were on maintenance hemodialysis.
CKD-V-D; chronic kidney disease patients on maintenance hemodialysis.

Table 1: Prevalence of anemia among chronic kidney disease patients on dialysis.

Table 1:			
Prevalence of anaemia in CKD-V-D patients			
Gender	Hb < 10	Hb ≥10	Total
Male	4 (20%)	8 (40%)	12 (60%)
Female	5 (25%)	3 (15%)	08 (40%)
Total	9 (45%)	11 (55%)	20 (100%)

DISCUSSION

Anemia predisposes CKD patients to grave cardiovascular outcomes and further progression of CKD . Anemia is highly prevalent in CKD population around the world. A study from US population showed prevalence of 53.4% in CKD-V patients which is consistent with our study [8]. In our neighbouring country prevalence of anemia is even higher (ranging from 78% to 94.7% in CKD-V patients). A study from Korean population showed the prevalence of anemia to 96.5% in CKD-V patients [2]. In both of these studies anemia was defined according to WHO (world health organization) i.e. <13mg/dl in males and 12mg/dl in female. In a study from Cameroon anemia was found in 94.3% of CKD-V-D patients [9].

Various factors have been attributed for anemia in CKD patients in addition to erythropoietin deficiency. These includes iron deficiency, low serum calcium levels, high serum phosphate levels, low BMI (body mass index), low serum albumin. Erythropeotin deficiency worsens with progressive decrease in kidney function. Chronic inflammatory state may lead to poor response to exogenous erythropoietin and worsening of anemia.

Anemia is associated with low health related quality of life and prompt measures should be taken to diagnose and manage anemia". KDIGO recommends testing for hemoglobin level in CKD-V-D patients at least every three months or when clinically indicated. The recent renal association guidelines advocate for screening of anemia in CKD patients at least twice a year. The main aim of the anemia management in CKD patients is to avoid blood transfusions and alleviate the symptoms associated with anemia [4].

Initial work up of patients with anemia should include complete blood count (CBC), absolute reticulocyte count, serum ferritin level, TSAT, serum vitamin B12 and folate levels including Hb concentration, red cell indices, white blood cell count, and differential and platelet count [5].

First step in management includes correction of serum iron and maintaining TSAT $\geq$ 30% and serum ferrtitin $\geq$ 500mcg/l. For iron replacement oral route is preferred in non-dialysis patients and IV route is preferred in dialysis patients. Erythropoietin stimulating agent therapy (ESA) should be started in non-dialysis CKD-V patients once Hb falls below 10mg/dl and in dialysis patients it should be utilized to prevent fall of Hb below 9mg/dl. ESA therapy should be initiated with great caution in patients with prior history of cerebrovascular accident (CVA) or malignancy. Potential side effects of ESA therapy include arteriovenous fistula failure, hypertension and stroke.

Various factors have been attributed in patients not responding to ESA and iron therapy which include chronic inflammatory state, malnutrition and bone mineral disease. KDOQI (Kidney disease outcome quality initiative) guidelines define adequate dialysis in terms of achieving of Kt/V of 1.2 in three sessions of HD per week. Inadequate dialysis also leads to poor response to ESA therapy [12].

In our population major factors that lead to poor anemia management includes in adequate dialysis (2/ week in majority of centers across Pakistan), mineral bone disease and poor compliance towards medicine. Heavy costs of treatment lead to poor compliance among CKD patients.

CONCLUSION

Anemia is prevalent in CKD patients. It's more prevalent especially in developing countries. Anemia poses major hazardous effect on quality of life and increases cardiovascular risks. Increasing duration of dialysis and ensuring the compliance of patients will help improve the management of anemia in our population.

Conflict of Interest

None

REFRENCES

1. Asif N, Hasan S and Hassan K. Hematological changes in patients of chronic renal disease and their response to treatment with erythropoietin. Int J pathol 2015; 13:14-19

2. Ryu S-R, Park SK, Jung JY, et al. The Prevalence and Management of Anemia in Chronic Kidney Disease Patients: Result from the Korea N Cohort Study for Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD). J Korean Med Sci 2017; 32: 249-256.

3. Kaliya M. Anemia in Chronic Kidney Disease (Ckd) Patients. IJAR 2015; 1: 386-389.

4. Chan K-Y, Li C-W, Wong H, et al. Effect of erythropoiesis-stimulating agents on hemoglobin level, fatigue and hospitalization rate in renal palliative care patients. International urology and nephrology 2014; 46: 653-657.

5. Levin A and Stevens PE. Summary of KDIGO 2012 CKD Guideline: behind the scenes, need for guidance, and a framework for moving forward. Kidney international 2014; 85: 49-61

6. Eriksson D, Goldsmith D, Teitsson S, et al. Cross-sectional survey in CKD patients across Europe describing the association between quality of life and anaemia. BMC Nephrology 2016; 17. DOI: 10.1186/s12882-016-0312-9.

7. Sathyan S, George S and Vijayan P. Prevalence of anemia and cardiovascular diseases in chronic kidney disease patients: a single tertiary care centre study. International Journal of Advances in Medicine 2017; 4: 247-251.

8. Stauffer ME and Fan T. Prevalence of anemia in chronic kidney disease in the United States. PloS one 2014; 9: e84943.

9. Pancha Mbouemboue O, Danbe OD, Tangyi Tamanji M, et al. Frequency of Specific Cardiovascular Disease Risk Factors among Cameroonian Patients on Dialysis: The Cases of Anaemia, Inflammation, Phosphate, and Calcium. Cardiology Research and Practice 2016; 2016.

10. Mikhail A, Brown C, Williams JA, et al. Clinical Practice Guideline Anaemia of Chronic Kidney Disease.

11. Yao Q, Axelsson J, Heimburger O, et al. Systemic inflammation in dialysis patients with end-stage renal disease: causes and consequences. Minerva urologica e nefrologica = The Italian journal of urology and nephrology 2004; 56: 237-248. 2004/10/07.

12. Dash I and Kumari S. Biochemical Analysis of End Stage Renal Disease Patients Following Regular Haemodialysis. International Journal of Clinical Biochemistry and Research 2015; 2: 172-176.