ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2015; 1(12): 386-389
www.allresearchjournal.com
Received: 07-09-2015
Accepted: 10-10-2015

Dr. Mehul Kaliya
Assistant professor, Medicine Dept., M.P. Shah GMC, Jamnagar.

Dr. Mittal Rathod
Tutor, Community medicine Dept., M.P.Shah GMC, Jamnagar.

Dr. Aniruddha Gohel
Post Graduate, Community medicine Dept., M.P. Shah GMC, Jamnagar.

Dr. Ajay Tanna
Assistant professor, Medicine Dept., M.P.Shah GMC, Jamnagar.

Dr. Manish Mehta
Professor and Head, Dept., M.P.Shah GMC, Jamnagar.

Correspondence
Dr. Mehul Kaliya
Assistant professor, Medicine Dept., M.P.Shah GMC, Jamnagar.

Anemia in Chronic Kidney Disease (Ckd) Patients

Mehul Kaliya, Mittal rathod, Aniruddha Gohel, Ajay Tanna, Manish Mehta

Abstract
Background: In patients with chronic kidney disease, norm chromic normocytic anaemia mainly develops from decreased renal synthesis of erythropoietin. The anaemia becomes more severe as the Glomerular filtration rate (GFR) progressively decreases. No reticulocyte response occurs, red blood cell survival is decreased and there is an associated increased bleeding tendency due to uraemia-induced platelet dysfunction. Untreated anaemia of CKD is strongly associated with cardiovascular and renal complications, resulting in increased hospitalisations and mortality. Therefore, correcting anaemia is considered an important part of slowing or even stopping the progression of CKD. [15]
Methods: In the present study, 50 patients of CKD admitted at GG Hospital, a tertiary care hospital, Jamnagar during period of 1 year, were included.
Results: In the present study, 58% patients have moderate, 22% have mild and 20% have severe form of anaemia
Conclusion: As anaemia is common in developing country and CKD is affecting haemopoietic system, 78% patient of study having anaemia.

Keywords: CRF, Anaemia

Introduction

Chronic kidney disease is a permanent and significant reduction in Glomerular filtration rate, or chronic irreversible destruction of kidney tissue [1]. It is characterised by a wide variety of biochemical disturbances and numerous clinical symptoms and signs [2]. The alteration includes hematologic abnormalities, cardiovascular problems, gastrointestinal disturbances, neurologic disorder, osteodystrophy, skin disorder and altered sexual function [3] Lipoprotein metabolisms are altered in most. The number of patients with end stage renal disease is growing worldwide. Chronic kidney disease (CKD) is rapidly assuming epidemic proportions globally [4, 5, 6].

In India too, there is a significant burden of CKD although exact figures vary [7]. About 20 – 30 patients have some degree of renal dysfunction for each patient who needs renal replacement treatment. But Less than 10% of end stage renal disease patients have access to any kind of renal replacement therapy [8, 9].

In patients with chronic kidney disease, norm chromic normocytic anaemia mainly develops from decreased renal synthesis of erythropoietin. The anaemia becomes more severe as the Glomerular filtration rate (GFR) progressively decreases. No reticulocyte response occurs, red blood cell survival is decreased and there is an associated increased bleeding tendency due to uraemia-induced platelet dysfunction.10, 11

Iron deficiency is also common in patients with chronic kidney disease (CKD). The iron deficiency may be absolute, often due to poor dietary intake or sometimes occult bleeding, or functional, when there is an imbalance between the iron requirements of the erythroid marrow and the actual iron supply. Iron deficiency leads to a reduction in formation of red cell haemoglobin, causing hypo chromic microcytic anaemia. Other causes for anaemia in chronic kidney disease include the presence of uremic inhibitors (eg, parathyroid hormone, inflammatory cytokines), reduced half-life of circulating blood cells and deficiencies of folate or vitamin B12.10, 11

It is often diagnosed by routine review blood tests. Renal anaemia may lead to the onset or aggravation of lethargy, cold intolerance and loss of stamina. Anaemia increases cardiac

output, therefore contributing to the development of left ventricular hypertrophy and dilatation. [12]

In people with anaemia of CKD, treatment should aim to maintain stable haemoglobin levels between 10 and 12 g/dL for adults and children aged over 2 years and between 9.5 and 11.5 g/dL in children aged under 2 years. Treatment with erythropoiesis-stimulating agents should be offered to patients with anaemia of CKD who are likely to benefit in terms of quality of life and physical function [13]. There are few studies comparing the efficacy of the various agents. One study reported that darbepoetin alfa weekly or every two weeks was more efficient in achieving target haemoglobin than those on weekly epoetin alfa, with fewer dose changes and minor vascular access complications [14]. The time taken for erythropoietin treatment to be effective will depend on individual patient factors, such as degree of anaemia, degree of kidney disease and presence of other adverse factors - eg, iron deficiency.

Untreated anaemia of CKD is strongly associated with cardiovascular and renal complications, resulting in increased hospitalisations and mortality. Therefore, correcting anaemia is considered an important part of slowing or even stopping the progression of CKD [15].

Thus keeping in a view above stated problems, present study was carried out.

Materials & methods

In the present study, 50 patients of CKD admitted at GG Hospital, a tertiary care hospital, Jamnagar during period of 1 year, were included. Patients were selected irrespective of age, sex, etiology, management or outcome with purposive sampling technique. Written informed consent form was given to the patient and if patient permitted then only recruited in study. Data were collected using a pretested Performa meeting the objectives of the study. Inclusion criteria were Age>/=19years, Non pregnant, Non HIV, Anasarca, Anaemia, Raised RFT, USG KUB finding especially CM differentiation abnormality. Exclusion criteria were Age</=18year, Pregnant female, HIV positive, ARF, Normal USG KUB findings. Term used CKD is defined as the presence of either kidney damage or Glomerular filtration rate (GFR) <60 ml/min/1.73 m [2]. (11)

Ethical clearance: The study protocol was reviewed and approved by the institutional ethical committee of the institution. Prior written informed consent was taken after fully explaining the purpose of the study.

Data entry and analysis

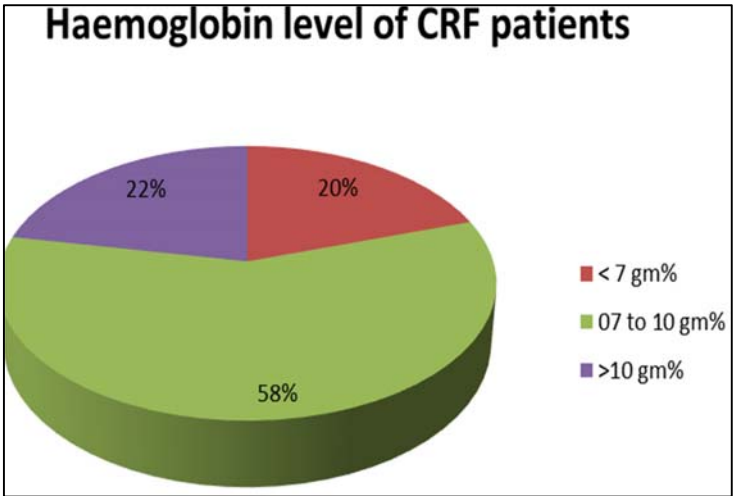
The data entry was done in Microsoft Office Excel 2007. Analysis was done using Epi info and Microsoft office Excel 2007 & SPSS.

Results

Table 1: Socio-demographic profile of the study population.

Characteristics	Frequency (Percentage, %)
Age groups (in years)	
≤20 years	5 (10%)
21-40 years	9 (18%)
41-60 years	20 (40%)
61-80 years	14 (28%)
≥81 years	2 (4%)
Gender	
Male	24 (48%)
Female	26 (52%)
Education Status	
Illiterate	37 (74%)
Primary	05 (10%)
Secondary	06 (12%)
Graduate	02 (4%)
Occupational	
Farmer	6 (12%)
Housewife	26 (52%)
Labourer	08 (16%)
Service	02 (4%)
Others	08 (16%)
Socioeconomic class	
Upper	0 (0%)
Middle	11 (22%)
Lower	39 (78%)

In present study of CKD patients maximum patients belonged to age group 41-60 years, i.e. 40% patients, followed by 61-80 years age group, i.e.28% with mean age of 51.74 years. Almost same distribution among male& female patients. Majority of participants were illiterate i.e. 74%. All women participants were housewife, where as of 48 % men, 16% were labourers, 12% were farmers, 4% were doing service in public or private sectors. None of the participants belonged to upper class. 78% participants belonged to lower class & rest of them from middle class.



Graph 1: Distribution of patients according to their Haemoglobin Status

78% of CRF patients had anaemia, of which 20% had severe form of anaemia.

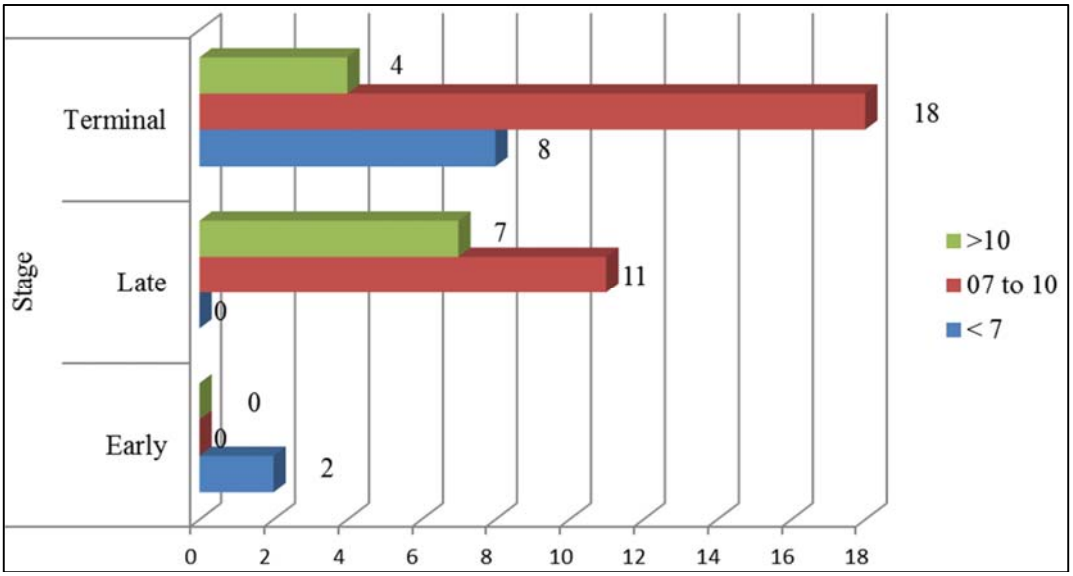
Table 2: Distribution of patients according to their Haemoglobin Status & Stage of CRF

Haemoglobin Level (gm %)	Stage			Total	
	Early	Late	Terminal	Frequency	Percentage (%)
< 7	02	0	08	10	20
7-10	0	11	18	29	58
>10	0	07	04	11	22

Of 50 CRF patients, 58% (29) patients had moderate form of anaemia i.e. Hb-7-10gm%, 22% (11) patients had mild form of anaemia i.e. Hb->10gm%, whereas 20% (10) patients had severe form of anaemia. I.e. Hb-<7%.

The National Health and Nutrition Examination Survey (NHANES) III study showed that the prevalence of anaemia increases as eGFR falls. Data collected in 2007-2010 showed that anaemia was twice as prevalent in people with CKD (15.4%) as it was in the general population (7.6%). The prevalence increased with the stage of CKD, from 8.4% at stage 1 to 53.4% at stage 5 [10]

Graphical presentation is as below:



Conclusion

Anaemia is in general common in developing country like India. CRF is a condition affecting haemato poetic system too. In present study CRF was prevalent in forty up age group patients. As it is Government tertiary hospital, most of the patients belonged to lower socio economical class. 78% of CRF patients had anaemia, of which 20% had severe form of anaemia.

Recommendations

There should be regular screening policy for all CRF patients so that timely initiations can be taken to prevent any morbidity and mortality at earliest.

References

1. Dewardener HE. An outline of normal and abnormal function. In: The kidney 4th edition Churchill Livingstone New York. 1986, 181-235.
2. Mathenge RN, Mcligego SO, Mutua AK, Otieno LS. The spectrum of echocardiographic finding in chronic renal failure. East African Medical Journal. 2003; 70(3):97-103.
3. Moronkola OA, Ojediran MM, Amosu A. Menstrual disorder in chronic renal failure patients attending renal clinics in Ibadan, Nigeria. African Health Sciences, 2006; 6(3):155-160.
4. Collins AJ, Foley RN, Chavers B, Gilbertson D, Herzog C, Johansen K. United States Renal Data System 2011 Annual Data Report: Atlas of chronic kidney disease and end-stage renal disease in the United States. (e1-420).Am J Kidney Dis. 2012; 59:A7.
5. Jha V, Garcia-Garcia G, Iseki K, Li Z, Naicker S, Plattner B. Chronic kidney disease: Global dimension and perspectives. Lancet. 2013; 382:260-72. [PubMed].
6. Couser WG, Remuzzi G, Mendis S, Tonelli M. The contribution of chronic kidney disease to the global burden of major noncommunicable diseases. Kidney Int. 2011; 80:1258-70. [PubMed].
7. Rajapurkar MM, John GT, Kirpalani AL, Abraham G, Agarwal SK, Almeida AF. What do we know about chronic kidney disease in India: First report of the Indian CKD registry. BMC Nephrol. 2012; 13:10.
8. Agarwal SK, Srivastava RK. Chronic kidney disease in India: Challenges and solutions. Nephron Clin Pract. 2009; 111:c197-203.
9. Kher V. End-stage renal disease in developing countries. Kidney Int. 2002; 62:350-62.
10. Stauffer ME, Fan T. Prevalence of anaemia in chronic kidney disease in the United States. PLoS One. 2014 Jan 2; 9(1):e84943. doi: 10.1371/journal.pone.0084943. eCollection 2014.
11. Mehdi U, Toto RD. Anaemia, diabetes, and chronic kidney disease. Diabetes Care. 2009; 32(7):1320-6. doi: 10.2337/dc08-0779.
12. Anaemia in Chronic Kidney Disease http://patient.info/doctor/anaemia-in-chronic-kidney-disease#ref-1
13. Chan KY, Li CW, Wong H. Effect of erythropoiesis-stimulating agents on haemoglobin level, fatigue and hospitalization rate in renal palliative care patients. Int Urol Nephrol. 2014; 46(3):653-7. doi: 10.1007/s11255-014-0661-x. Epub 2014 Feb

14. Bernieh B, Abouchacra S, Boobes Y. Comparison between short- and long-acting erythropoiesis-stimulating agents in hemodialysis patients: target haemoglobin, variability, and outcome. Int Urol Nephrol. 2014; 46(2):453-9. doi: 10.1007/s11255-013-0640-7. Epub 2014 Jan 22.
15. Schmidt RJ, Dalton CL. Treating anaemia of chronic kidney disease in the primary care setting: cardiovascular outcomes and management recommendations. Osteopath Med Prim Care. 2007; (2)1:14.