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PREVALENCE OF ANEMIA IN PATIENTS WITH NON DIALYSIS CHRONIC KIDNEY DISEASE

Pathology

Dr. Usha Saroj	MD (Pathology).Assistant professor, Dept of Pathology, Patliputra Medical College Hospital, Dhanbad, (on deputation to Blood bank, RIMS, Ranchi, Jharkhand -834009).
Dr Abhay Kumar*	MD (Medicine) Associate professor, Dept of Medicine, Rajendra Institute of medical sciences, Ranchi, Jharkhand, India-834009 *Corresponding Author
Dr. Ajay Kumar Bakhla	M.D.(Psychiatry), DPM.Associate Professor of Psychiatry, Department of Psychiatry Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand, India-834009

ABSTRACT

Aims—We aimed to evaluate the prevalence of anemia among patients of Chronic Kidney disease, who are not requiring dialysis in a retrospective chart review.

Methods— : It was a retrospective chart review study, all documents either as hard copy or electronically stored of diagnosed cases of CKD were assessed for inclusion – exclusion criteria, and on qualification their small Socio-demographic data sheet was filled up and available lab reports were recorded in tabulated form.

Results— A total of 140 subjects were included for the study, 91 patients (65 %) were male and 35 % (n=49) were female. Based on blood hemoglobin estimation a total of 108 patients had anemia, which consisted of 77.1% of the total sample size.

Conclusions— This study finds a prevalence of 77.1 % of anemia among CKD.

KEYWORDS

Prevalence; Anemia; Chronic Kidney Disease.

INTRODUCTION

The prevalence of Chronic kidney disease (CKD) is increasing day by day due to multiple etiological factors. Diabetes mellitus along with hypertension are one of the leading cause for CKD, where anemia is frequent complication of CKD as well as to diabetes itself [1]. Anemia is correlated strongly with both CKD progression and patient survival [2], as well as quality of life (QoL) and healthcare costs [3]. The causes of anemia in patients with CKD include erythropoietin (EPO) deficiency, decreased responsiveness to EPO, shortened red blood cell survival, iron deficiency, and chronic inflammation. Treatment strategies for anemia in CKD include use of erythropoiesis-stimulating agents (ESAs), iron therapy, ESA resistance, and blood transfusion [4]. Anemia is also a common hematological deficit seen in patients with diabetes [5], and may also be associated with various nutritional deficit such as iron, B12, folic acid, infectious diseases such as malaria, hookworm, and schistosomiasis [6]. It may also be a manifestation of malignancy [7].

It is necessary to examine the prevalence of anemia in non dialysis patients, reliable prevalence data on anemia in CKD are essential to develop health policies for the prevention and control of CKD. The estimated prevalence of anemia in developing countries is 39% in children <5 years, 48% in children 5–14 years, 42% in women 15–59 years, 30% in men 15–59 years, and 45% in adults >60 years [8]. Prevalence of anemia among women of reproductive age (% of women ages 15-49) in India was 51.40 as of 2016. Its highest value over the past 26 years was 55.40 in 1990, while its lowest value was 51.10 in 2014. [9]. After puberty, the prevalence of anaemia was constantly over 50% in females [10]. In US anemia was twice as prevalent in people with CKD (15.4%) as in the general population (7.6%). The prevalence of anemia increased with stage of CKD, from 8.4% at stage 1 to 53.4% at stage 5. [11]. Where as in India the prevalence of anemia increased with stage of CKD, from 66.6% at stage 3 to 94.7%% at stage 5 [12].

Thus we planned this retrospective chart review study to find a prevalence of anemia among non dialysis CKD patients of ours own state hospital.

MATERIALS AND METHOD

This study was conducted at department of medicine and pathology at a tertiary care medical college hospital of Jharkhand, India. It was a retrospective chart review study covered over a period of six months duration (December 2017 to May 2018). This study was designed as a non interventional, retrospective study. Data was retrieved from Medical record department for last six months duration. All documents either as hard copy or electronically stored of diagnosed cases of CKD were assessed for inclusion – exclusion criteria, and on qualification their small Socio-demographic data sheet was filled up. All the subject records for which diagnosis of CKD was documented and their hematological investigations were performed and results were available were included in the study while the subject records with incomplete information were excluded from the study.

The diagnosis of anemia was defined as a Hb less than 13.0 g/dL in men and less than 12.0 g/dL in women, as recommended by the National Anemia Action Council and the WHO [13].

Socio-demographic Data Sheet: The socio demographic data sheet included age, religion, occupation, education and clinical information like duration of CKD and other medical history. These data regarding the demographics and medical history were collected by physicians at the time of consultation was retrieved, tabulated and saved for analysis purpose.

STATISTICAL ANALYSIS:

The collected data of all patients was statistically analyzed, using Statistical Package for Social Sciences (SPSS, Inc., Chicago, Illinois) version 10.0. Data analysis included means and standard deviations for complete sample. Frequency analysis was used to determine the prevalence of anemia.

RESULTS

A total of 140 patients with ND-CKD (men, 91 [65%]; women, 49 [35%]) with a mean age of 62.09 ± 5.76 years were included for the analysis. Other baseline characteristics of the participants are shown in Table 1. The mean fasting blood sugar was 133.29 ± 12.63; the mean Post prandial blood sugar was 155.82 ± 12.56. The mean Hb1Ac were 6.16 ± 1.36 and serum creatinine was 3.76 ± 1.36 mg/dl. Finally the mean hemoglobin for the whole sample was 10.74 ± 2.17 gm%. (Table -1)

The prevalence of anemia was 77.1 % in the overall study sample, with 91 (65%) men and 49 (35%) women, the prevalence of anemia was 75.8% and 79.6% respectively. (Table -2)

DISCUSSION

This is a retrospective chart review study; we found a 77.1 % prevalence of anemia among diagnosed patients of CKD, However for male patients the prevalence was 75.8% and for females it was 79.6%. The finding of the current study is different from many previous studies and is in accordance to certain studies. The interpretation of different result should be carefully analyzed for consideration of socio cultural / country of study as well as staging of the CKD. In a US based study the prevalence of anemia in CKD was founded only 53.4% at

stage 5, whereas for stage I the prevalence was only 8.4% [11]. In contrast in our country, the prevalence of anemia is much higher in healthy general population and it can be as high as 48-55% [8-9].

Anemia increases the risk of dialysis in patients with CKD and correlates significantly with the mortality and hospitalization [14]. Anemia is considered as one of the most independent modifiable risk factor of cardiovascular and renal damage in CKD. Hence presence or absence of anemia is important for early diagnosis, prevention, and increasing ND-CKD awareness.

We found prevalence of anemia on slightly higher side of many referenced studies, this may be due to various reasons like age, gender, food habits, sample's metabolic profile and CKD staging.

In future we also need larger samples size, prospective design studies, along with a matched control group, simultaneous assessment of other biochemical parameters, and burden of various other metabolic problems, and follow-up studies to know the longitudinal course of these problems. There should be attempt to determine if early screening of anemia levels may predict the prognosis of illness.

CONCLUSION
This study finds a prevalence of 77.1% of anemia in Non dialysis CKD patients.

TABLE 1. Socio Demographic And Clinical Features Of The Sample (n=140)

	Minimum	Maximum	Mean	Std. Deviation
Age	45.00	71.00	62.09	5.76
FBS	120.00	167.00	133.29	12.63
PPBS	133.00	176.00	155.82	12.56
Hb1AC	5.00	6.50	6.16	.38
Serum Creatinine	1.00	6.60	3.76	1.36
Hb%	6.50	14.00	10.74	2.17

TABLE -2 : Number, Percentage and prevalence of anemia across gender and total sample.

n=140		Number	Percentage
Gender	Male (Total)	91	65
	Female (Total)	49	35
Male	Normal	22	24.2
	Anemia	69	75.8
Female	Normal	10	20.4
	Anemia	39	79.6
TOTAL	Normal	32	22.9
	Anemia	**108**	**77.1**

REFERENCES
1. Portoles J, Gorriz JL, Rubio E, et al. The development of anemia is associated to poor prognosis in NKF/KDOQI stage 3 chronic kidney disease. BMC Nephrol 2013;14:2.
2. Horl WH. Anaemia management and mortality risk in chronic kidney disease. Nat Rev Nephrol 2013;9:291–301.
3. Mehdi U, Toto RD. Anemia, diabetes, and chronic kidney disease. Diabetes Care 2009;32:1320–6.
4. KDOQIKDOQI Clinical Practice Guideline and Clinical Practice Recommendations for anemia in chronic kidney disease: 2007 update of hemoglobin target. Am J Kidney Dis 2007;50:471–530.
5. Thomas MC, MacIsaac RJ, Tsalamandris C, Molyneaux L, Goubina I, Fulcher G, et al. The burden of anaemia in type 2 diabetes and the role of nephropathy. A cross-sectional audit. Nephrol Dial Transplant. 2004;19:1792–7.
6. De Benoist B, McLean E, Egli I, Cogswell M. Worldwide prevalence of anaemia. 2008. p. 1993–2005.
7. Groopman JE, Itri LM. Chemotherapy-induced anemia in adults: incidence and treatment. J Natl Cancer Inst. 1999;91:1616–34.
8. WHO, UNICEF, and UNU, Iron Deficiency Anaemia: Assessment, Prevention and Control, A Guide for Programme Managers, WHO, UNICEF, UNU, Geneva, Switzerland,2001, http:// www. who. int/ nutrition /publications/ micronutrients /anaemiairon deficiency/ WHO_NHD_01.3/en/index.html.
9. India - Prevalence of anemia. World Health Organization, Global Health Observatory Data Repository/World Health Statistics down loaded on 10.07.2018 from https://www.indexmundi.com/facts/india/prevalence-of-anemia.
10. Gerardo Alvarez-Uria, Praveen K. Naik, Manoranjan Midde, Pradeep S. Yalla, and Raghavakalyan Pakam, "Prevalence and Severity of Anaemia Stratified by Age and Gender in Rural India," Anemia, vol. 2014, Article ID 176182, 5 pages, 2014. https://doi.org/10.1155/2014/176182.
11. Stauffer ME, Fan T. Prevalence of anemia in chronic kidney disease in the United States. PLoS One. 2014 Jan 2;9(1):e84943.
12. Sathyan S, George S, Vijayan P. Prevalence of anemia and cardiovascular diseases in chronic kidney disease patients: a single tertiary care centre study . Int J Adv Med 2017;4: 247- 51.
13. NKF-DOQI clinical practice guidelines for the treatment of anemia of chronic renal failure. National Kidney Foundation-Dialysis Outcomes Quality Initiative. Am J Kidney Dis 1997;30:S192–40.
14. Locatelli F, Pisoni RL, Combe C, et al. Anaemia in haemodialysis patients of five European countries: association with morbidity and mortality in the Dialysis Outcomes and Practice Patterns Study (DOPPS). Nephrol Dial Transplant 2004;19:121–32.