Indian Journal of Basic and Applied Medical Research; September 2020: Vol.-9, Issue- 4, P. 398 - 404
DOI: 10.36848/IJBAMR/2020/18215.56160

Original article:

Study of demographic profile of Chronic Kidney Disease at tertiary care hospital

[1]Dr Rajashree Gowardhan Patil , [2]Dr Amol Balwant Shinde*

[1]Medical Officer, Pune Municipal Corporation, Pune
[2]Professor and Head, FMT , GMC, Baramati, Pune
Corresponding author *

Abstract:

Introduction: Chronic kidney disease (CKD) is emerging as a major health problem with poor outcome resulting in significant morbidity and mortality. As kidney play important role in maintaining homeostasis, chronic kidney disease affects every body system.

Material and methods: The present study entitled "Study of Lipid profile, Lipoprotein (a), Apoprotein AI and B in chronic kidney disease" is case-control study and has been carried out in our institute during the period of February 2011 - August 2012. All the study subjects were examined & investigated according to predesigned proforma .The study protocol was approved by the Ethical Committee of the Institute. Informed written consent was obtained from all the study subjects enrolled in the study 50 diagnosed chronic kidney disease patients (Cases) attending medicine outpatient department (OPD) and / or admitted in ward/kidney unit in this institute and who were willing to participate in the study were selected for the present study.

The mean age of distribution in group A (Cases) is 47 ± 11.6 years and the mean age of distribution in group B (Controls) is 47.32 ± 11.76 years. (Fig- 5.1). Most of subjects of control and cases of chronic kidney disease are between 51- 60 years.

Results: The etiology of CKD among Group A cases was diabetes mellitus in 15 cases, hypertension in 12 cases, both hypertension and diabetes mellitus in 10 cases, glomerular disease was found in 5 cases, tubulointerstitial disease in 3 cases and obstructive nephropathy in 3 cases respectively. There were 2 cases of polystic kidney disease.

Conclusion: Patients with chronic kidney disease (CKD) are at an increased risk for cardiovascular diseases and have a higher prevalence of dyslipidemia than general population.

Keywords : Chronic kidney disease , lipid profile

Introduction:

Chronic kidney disease (CKD) is emerging as a major health problem with poor outcome resulting in significant morbidity and mortality. As kidney play important role in maintaining homeostasis, chronic kidney disease affects every body system.[1] It is 12th leading cause of death and 17th cause of disability. As per the Global Burden of Disease project and World Health Report 2002, kidney and urinary tract diseases leading to approximately 850,000 deaths every year thus contributing to the global burden of diseases[2,3]

Chronic kidney disease includes a spectrum of different pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate (GFR). Now a day's Chronic kidney disease patients, irrespective of cause, are at increased risk of cardiovascular disease (CVD) like coronary heart disease, cerebrovascular disease, peripheral vascular disease and heart failure.[4]

Material and methods:

The present study entitled "Study of Lipid profile, Lipoprotein (a), Apoprotein AI and B in chronic kidney disease" is case-control study and has been carried out in our institute during the period of February 2011 - August 2012. All the study subjects were examined & investigated according to predesigned proforma .The study protocol was approved by the Ethical Committee of the Institute. Informed written consent was obtained from all the study subjects enrolled in the study 50 diagnosed chronic kidney disease patients (Cases) attending medicine outpatient department (OPD) and / or admitted in ward/kidney unit in this institute and who were willing to participate in the study were selected for the present study.

50 age and sex matched healthy and apparently normal controls were also selected for study. The cases and controls were in the age group of 21-65 years of either sex.

Inclusion criteria:

Criteria for chronic kidney disease

a) Diagnosed cases of chronic kidney disease.

b) Patient of either sex between 21 to 65 years of age.

c) Those who gave consent.

Criteria for controls: Age & Sex matched healthy and apparently normal individuals without family history of kidney disease.

EXCLUSION CRITERIA:

1) Patients with diagnosed chronic kidney disease treated with renal transplantation or dialysis.

2) Patients with diagnosed cases of acute renal failure like prerenal, renal and postrenal acute renal failure or azotemia.

3) Patients with diagnosed chronic kidney disease with abnormal cardiac function secondary to myocardial ischemic disease and/or left ventricular dysfunction.

4) Patients of nephrotic syndrome, Liver diseases.

Results:

In the present study entitled -Study of Lipid profile, Lipoprotein (a), Apoprotein AI and B in chronic kidney disease", 50 diagnosed patients of chronic kidney disease (GROUP A: n= 50); and 50 age and sex matched healthy and normal subjects as controls (GROUP B: n= 50) are selected as study subjects. Group A (cases) is further divided into subgroups depending upon their stage of chronic kidney disease as per GFR calculated by MDRD equation.

Indian Journal of Basic and Applied Medical Research; September 2020: Vol.-9, Issue- 4, P. 398 - 404
DOI: 10.36848/IJBAMR/2020/18215.56160

Table 1: Age wise distribution in study group A (cases) and control group B

Groups	**Group A**		**Group B**		**Total**	
Mean age In years	47 ± 11.66 yrs		47.32 ± 11.76 yrs			
Age group (yrs)	N	%	N	%	N	%
21--30	5	10%	5	10%	10	10%
31--40	11	22%	11	22%	22	22%
41--50	12	24%	12	24%	24	24%
51--60	15	30%	14	28%	29	29%
>60	7	14%	8	16%	15	15%
Total	50	100%	50	100%	100	100%

Table 2: Gender distribution in study group A (cases) and control B

Gender	**Male**		**Female**		**Total**	
Groups	N	%	N	%	N	%
Group A	25	50%	25	50%	50	100%
Group I	12	48%	13	52%	25	100%
Group II	13	52%	12	48%	25	100%
Control B	25	50%	25	50%	50	100%

Above two tables show age and gender distribution between group A (cases) and group B (control).

The mean age of distribution in group A (Cases) is 47 ± 11.6 years and the mean age of distribution in group B (Controls) is 47.32 ± 11.76 years. (Fig- 5.1). Most of subjects of control and cases of chronic kidney disease are between 51- 60 years.
The number of males in Group A (cases) is 25 and in Group B also consist of 25 males. The number of females in group A (Cases) is 25 and in Group B (Controls) it is 25.Group A-I consist of 12 males and 13 females. Group A-II consists of 13 males and 12 females.

Table 3 ETIOLOGICAL DISTRIBUTION OF GROUP A (CASES)

ETIOLOGY OF CKD	Number of Patients
Diabetes mellitus	15
Hypertension	13
Diabetes + Hypertension	10
Glomerular disease	4
Tubulointerstitial disease	3
Obstructive Nephropathy	3
Polystic kidney disease	2

The etiology of CKD among Group A cases was diabetes mellitus in 15 cases, hypertension in 12 cases, both hypertension and diabetes mellitus in 10 cases, glomerular disease was found in 5 cases, tubulointerstitial disease in 3 cases and obstructive nephropathy in 3 cases respectively. There were 2 cases of polystic kidney disease.

From above data, diabetes mellitus is found to be most common cause of CKD followed by hypertension.

Indian Journal of Basic and Applied Medical Research; September 2020: Vol.-9, Issue- 4, P. 398 - 404
DOI: 10.36848/IJBAMR/2020/18215.56160

TABLE 4 KIDNEY FUNCTION TEST IN GROUP A (CASES) AND GROUP B (CONTROLS)

PARAMETER	Group A n=50	Group B n=50	p-value	Inference
Sr.Creatinine(mg/dl	3.24 ± 3.01	0.74 ± 0.22	<0.0001	HS
Bl.Urea mg/dl	123.46 ± 49.12	30.26 ± 13.24	<0.0001	HS

Where, n = Number of subjects; HS-Highly significant

1) Group A (Cases) has mean serum creatinine level of 3.24 ± 3.01mg/dl which is significantly higher as compared to that of Group B (Controls) i.e.0.74 ± 0.22 mg/dl. The difference in the mean serum creatinine levels between Group A and Group B is highly statistically significant .i.e. $p < 0.0001$.

2) The mean blood urea level in Group A (Cases) is 123.46 ± 49.12 mg/dl and in Group B (Control) it is 30.26 ± 13.24 mg/dl. The mean blood urea levels in Group A and Group B show a highly significant difference with $p < 0.0001$.

Discussion:

CHRONIC RENAL FAILURE (CRF) is associated with premature atherosclerosis and increased incidence of cardiovascular morbidity and mortality. Several factors contribute to atherogenesis and cardiovascular disease in patients with CRF. Notable among the CRF-induced risk factors are lipid disorders, oxidative stress, inflammation, physical inactivity, anemia, hypertension, vascular calcification, endothelial dysfunction and depressed nitric oxide availability.[5]

CKD is associated with cardiovascular diseases (CVD) such as disorders of heart including left ventricular hypertrophy, cardiomyopathy and disorder of vascular system including premature atherosclerosis and arteriosclerosis. These two disorders are usually associated and interrelated leading to increased incidence of cardiovascular morbidity and mortality.[6]

Considering the above fact, lipid profile, Lipoprotein (a) and Apoliporoteins A-I and B were evaluated in diagnosed cases of Chronic Kidney Disease and controls. Since it had been observed that the cardiovascular risk has been increased even in very early stage of CKD, the cases i.e. group A was further sub-grouped on the basis of stages of CKD. Group A-I included stage 1 and stage 2 CKD having GFR ≥ 60 ml/min/1.73m2. Group A-II included stage 3, stage 4 CKD with GFR between 15 to 59 ml/min/1.73m2 and stage 5 CKD having GFR less

than 15 ml/min/1.73m2. The study protocol was approved by the Ethical Committee of the Institute. Informed written consent was obtained from all the study subjects enrolled in the study.

Group A (Cases) had a mean age of 47 ± 11.6 years compared to a mean age of 47.32 ± 11.76 years in Group B (Controls). Group A (Cases) consisted of 25 males and 25 females and Group B (Controls) also consisted of 25 males and 25 females. In present study, on dividing the cases according to their etiology of CKD, it was found that 15 cases had diabetes mellitus; 13 cases were hypertensive and 10 patients suffered from both diabetes mellitus and hypertension. It indicates that diabetes mellitus is the most common cause of CKD followed by hypertension. These findings are supported by various Indian studies who reported that diabetes has emerged as the most frequent cause of CKD followed by hypertension. .[7]

All the participants in study were evaluated with kidney function test to confirm the diagnosis of CKD. Group A (Cases) had mean serum creatinine and blood urea level of 3.24 ± 3.01 mg/dl and 123.46 ± 49.12 mg/dl respectively, which was statistically significantly higher ($p < 0.001$) as compared to that of mean serum creatinine and blood urea levels of Group B (Controls) i.e. 0.74 ± 0.22 mg/dl and 30.26 ± 13.24 mg/dl respectively.

A reduced GFR leads to retention of nitrogenous waste products (azotemia) such as urea and creatinine.29 Both urea and serum creatinine, products of protein metabolism, are cleared almost entirely by the kidneys and are well- established biomarkers of renal function.[8]

Conclusion:

Patients with chronic kidney disease (CKD) are at an increased risk for cardiovascular diseases and have a higher prevalence of dyslipidemia than general population.

References:

1.Snively CS, Gutierrez C. Chronic kidney disease: Prevention and treatment of common complications. Am Fam Physician. 2004 Nov 15; 70(10):1921-28.

2. Schieppati A, Remuzzi G. Chronic renal diseases as a public health problem: Epidemiology, social, and economic implications. Kidney International. 2005; 68:S7-S10.

3. Zimmet P, Alberti KG, Shaw J: Global and societal implications of the diabetic epidemic. Nature.2001; 414:782–787.

4. Agarwal SK, Srivastava RK. Chronic kidney disease in India: challenges and solutions. Nephron Clin Pract. 2009; 111: c197- c203.

5.Prabahar MR, Chandrasekaran V, Soundararaj P. An Epidemic of chronic disease in India -What can be done? Saudi j kidney dis transpl. 2008; 19(5):847-53.

6.Mesquita Joana; Varela, Ana; Medina, Jose Luis .Dyslipidemia in renal disease: Causes, consequences and treatment Published in Endocrinol Nutr.2010; 57(9) :440-448.

7. Campean V, Neureiter D, Varga I, Runk F, Reiman A, Garlichs C, et al. Atherosclerosis and vascular calcification in chronic renal failure. Kidney Blood Press Res. 2005; 28:280-89.
8. Sumathi ME, Tembad MM, Jayaprakashmurthy DS, Preethi BP. Study of lipid profile and oxidative stress in chronic renal failure. Biomedical Research. 2010; 21(4):451-56.

Date of Submission: 015 October 2020 Date of Publishing: 25 November 2020
Author Declaration: Source of support: Nil, Conflict of interest: Nil
Ethics Committee Approval obtained for this study? YES
Was informed consent obtained from the subjects involved in the study? YES
For any images presented appropriate consent has been obtained from the subjects: YES
Plagiarism Checked: Using duplichecker.com

DOI: 10.36848/IJBAMR/2020/18215.56160