www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 79.54
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossrefDOI: https://dx.doi.org/10.18535/jmscr/v6i11.21

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Cardiovascular Abnormalities in CKD Patients

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Introduction

Chronic kidney disease encompasses a spectrum of different pathophysiological process and is defined as abnormalities of kidney structure or function, present for >3 months, with implications for health 10% of the population worldwide is affected by chronic kidney disease and millions die each year because they do not have access to affordable treatment.[1] According to the 2010 Global Burden of Disease study, chronic kidney disease was ranked 27th in the list of causes of total number of deaths worldwide in 1990, but rose to 18th in 2010. This degree of movement up the list was second only to that for HIV and AIDs.[2]

Over 2 million people worldwide currently receive treatment with dialysis or a kidney transplant to stay alive, yet this number may only represent 10% of people who actually need treatment to live.[3]

Cardiovascular disease is one of the leading causes of the morbidity and mortality in the chronic kidney disease. There is tremendous increase in the risk of cardiovascular disease as the severity of the chronic kidney disease increases.

In cardiovascular disease left ventricular hypertrophy remains the most consistent of the findings.

As early as 1827 Richard Bright drew attention to the common presence of left ventricular hypertrophy and thickening of the aortic wall in patients with end stage renal disease

It is associated with increase the risk for cardiac ischemia, congestive heart failure, as well as a very strong independent predictor of cardiovascular mortality

Methods

This study will be done in Katihar Medical College and Hospital, from December 2016 to May 2018 for a period of one and a half year.

This study will include:

70 patients of chronic kidney disease irrespective of their etiology attending the medicine outpatient/inpatient department and also dialysis unit of Katihar Medical College and hospital

Inclusion Criteria

1. Random selection of cases with CKD without considering the etiology, of both sexes
2. Patient with chronic kidney disease on conservative management and on dialysis.
3. Age more than 18 years.

Exclusion Criteria

1. Documented ischaemic heart disease.
2. Congenital heart disease.
3. Valvular heart disease.
4. Age less than 18 years.

Results

In the present study majority of the patients were in the age group of 61-70 years, combined diabetes and hypertension was the leading cause of chronic kidney disease, followed by diabetes then hypertension in our study.

Majority of patients in our study were distributed in moderate and severe CKD group, and majority of patient were in stage 5 of CKD based on creatinine clearance

In our study 63% of patients had left ventricular hypertrophy with or without strain and 31% had no signs of left ventricular hypertrophy on ECG and ST-T changes were seen in 30% of patients

On echocardiographic examination we observed 69% had left ventricular hypertrophy (48% concentric and 21% eccentric LVH), diastolic dysfunction was seen in 42% and systolic dysfunction in 20% and 20% is having pericardial effusion and 31% patients had normal ECHO

Majority of severe and moderate CKD patients (89% and 71%respectively) developed LVH

Majority of severe and moderate CKD patients developed systolic and diastolic dysfunctions

Majority of moderate and severe CKD patients developed ST-T changes

Table – 1 Age Distribution

Age - Group	Frequency	%
31 – 40	3	4%
41 – 50	11	16%
51 – 60	21	30%
61 – 70	28	40%
71 – 80	7	10%
Total	70	100%

Table – 2 Severity of CKD

Severity of CKD	Frequency	%
1.5 – 3.0 (mild)	14	20%
3.0 – 6.0 (moderate)	28	40%
>6.0 (severe)	28	40%
Total	70	100%

Table – 3 Electrocardiographic changes

Particulars	Frequency	%
LVH	44	63%
ST-T changes	21	30%
P-Mitrale	1	1%
Low Voltage	4	6%
Arrhythmia	1	1%

Table – 4 Echocardiographic observation

Particulars	Frequency	%
Concentric – LVH	34	48%
Eccentric LVH	15	21%
Diastolic dysfunction	29	42%
Systolic dysfunction	14	20%
Pericardial effusion	14	20%
Normal	22	31%

Table – 5 Association of LVH with severity of CKD an Echocardiographic finding

Particulars	LVH	%
Mild CKD	4	28%
Moderate CKD	20	71%
Severe CKD	25	89%

Discussion

In our study maximum patient 28(40) are from 61-70 years of age group and 21 patients (30%) are from 51-60 yrs of age group. in the study of BEHERA BK et al. 2017 November in which majority of patients were in the age group of 61-70 that included 41% of the patient4

IN our study there were 80% of the patient were distributed in moderate and severe ckd (40% in each group). 57% of patient were of moderate to severe CKD and 27% of patient of severe CKD In study done by MAHMOOD et al[5]

In our study electrocardiographic changes in CKD 63% majority of the patient has left ventricular hypertrophy and 30% has ST-T changes, the study done by SALAMN SHAFI et al department of medicine Pakistan which has 41% of left ventricular hypertrophy and 23% ST-T changes[6]

In our study in echocardiographic observation 69% develop LEFT VENTRICULAR HYPERTROPHY majority of those (48%) had concentric LVH and 42% of patient develops diastolic dysfunction and 14% develop systolic dysfunction. In study done by MUKESH LADDHA et al January 2014 in this study LVH

was present in 74% and diastolic dysfunction in 61% and systolic dysfunction in 24%. Presence of LVH is associated with severe diastolic and systolic dysfunction[7]

In our study in association of LVH with severity of CKD 89% of LVH was found in severe case of CKD and 71% of LVH was found in moderate CKD. The study done by SUSHANT KUMAR et al Dec 2014 in severe CKD 88% had LVH, in moderate CKD 51% had LVH. It suggests as the severity of CKD increases increase of LVH incidence occur[8]

Conclusion

There is high prevalence of left ventricular hypertrophy among CKD patients this implies that these patients require detail cardiovascular examination in absence of the cardiac symptoms and efforts should be aimed at prevention and control of these diseases

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