



PREVALENCE AND PATTERN OF 2D-ECHO CHANGES AND ITS ASSOCIATED FACTORS IN CHRONIC KIDNEY DISEASE PATIENTS

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ABSTRACT A study of Lipid profile in CKD patient is subject of interest due to impact on the individual and society as dyslipidaemia is one of the traditional risk factors for CVD which is responsible for most of the morbidity & mortality in CKD patient. And its study can lead to therapeutical result affecting both short term and long-term outcomes. **Aims & Objective-** To identify and analyse lipid alteration in CKD patients and study the correlation between renal function and lipid abnormalities in CKD **Methods-** Our study is hospital based descriptive observational study for duration of 18 months. **Results-** Study included 100 patients in which mean age was 51.88 and male to female ratio of 1.5:1. Prevalence of Lipid Profile abnormalities seen as HDL decreased in 100% patient and Cholesterol, LDL, Triglyceride increased in 40%, 24%, 64% patients respectively **Conclusion-** Dyslipidaemia is common among patients with CKD and predominant lipid profile abnormalities were reduced HDL and elevated Triglycerides. Hence regular monitoring of lipid profile should be done in patients of CKD

KEYWORDS : Chronic Kidney Disease (CKD), 2decho, Cardiovascular Disease (CVD)

INTRODUCTION

CKD and cardiac disease seem to be inextricably linked. Cardiovascular disease is a major cause of mortality in patients with mild to moderate CKD and end stage renal disease (ESRD). [1,2] Cardiovascular mortality 500 times higher in 25- to 34-year-old ESRD patients than in individuals from the general population of the same age and race. [2,3]

CKD is associated with a cardiovascular complication comprised of Angina pectoris, myocardial infarction, dysrhythmia, cardiac failure, stroke, and peripheral vascular diseases.[4] Cardiomyopathy, whether clinically silent or not, is an independent predictor of cardiac morbidity and mortality.[5]

In a retrospective cohort study only a tiny minority of patients (0.5 – 1%) with mild to moderate CKD developed ESRD over a 5-year follow up, while as many as 19 and 24% of these patients with mild and moderate renal insufficiency, respectively, died mostly of cardiovascular complications in the same period. [11]

An understanding of the pathophysiology of cardiovascular diseases in chronic kidney disease enables prevention, early diagnosis and prompt interventions to control the complications.

Primary care physicians (PCP) often manage patients with CKD in the early stages of the disease and have a pivotal role in affecting long term outcomes in CKD patients related to cardiovascular and all-cause mortality.[12]

The clinical manifestation of CKD and CVD overlap substantially and often missed on clinical examination; hence these abnormalities have to be evaluated by non-invasive, easily available diagnostic method i.e., 2DECHO to prevent morbidity and mortality.

Thus, this study was aimed at to study 2DECHO changes in CKD patients.

Justification Of Study

Cases of Chronic Kidney Disease are increasing day by day. Patients with chronic kidney disease typically have complex medical needs and are at high risk of complications. Cardiovascular disease is the leading cause of morbidity and mortality in patients with chronic kidney disease. This increased risk of cardiovascular disease may begin during early stage of chronic kidney disease much before the onset of kidney failure. This high burden of cardiovascular disease mortality is well illustrated by comparing cardiovascular disease mortality in dialysis population to general population. Abnormalities in

cardiovascular system like Lvh, conduction abnormality, myocardial ischemia are common in such patients and it have multifactorial etiology and are associated with an increased risk of complications which may cause deterioration of hemodynamic status of patient. Information and data obtained from this study would be utilized for better care and management and would help to know the changes in cardiovascular system parameters of patient chronic kidney disease.

Aims And Objectives Of The Study

1. To study the electrocardiographic changes and its prevalence in CKD patient
2. To study the cardiac changes and complications in patients with chronic kidney disease.

MATERIAL AND METHOD

This was descriptive observational study of Echocardiography in CKD patient. The study was conducted in Department of Medicine at SKN Medical college and General Hospital during a period of 18 months. The case record of 100 patient were reviewed who met inclusion and exclusion criteria

Inclusion criteria:

Admitted patient with age ≥ 18 years both male and female diagnosed with chronic kidney disease and presented with any of the following pedal oedema, puffiness of face, oliguria/anuria, haematuria, breathlessness, azotaemia for >3 months with or without features of uraemia.

Exclusion criteria:

1. Known case of Valvular heart disease
2. Known case of congenital heart disease
3. All patients diagnosed with primary cardiovascular disorder.
4. Any Malignancy
5. Chronic alcoholics
6. Patient who are HBsAg positive, HIV positive, HCV antibody positive

Data was recorded according to prespecified protocol. The data was registered as demographic characteristics, history regarding symptoms and duration of the kidney disease, hypertension, diabetes, smoking, alcoholism, drug intake & treatment, detailed clinical examination and diagnostic data.

2DECHO done for every patient and following test were also done ECG Fasting blood glucose and post prandial (mg/dL), HbA1c, Lipid profile, Hemogram, RFT with electrolytes, Urine routine, Estimated Glomerular filtration rate (eGFR) as assessed by CKD-EPI, LFT with enzymes.

RESULTS

Study included 100 CKD patient of which age variation is 40 to 80 years and maximum number of patients were in age group of 41 to 60 years with Mean age of 58.88 ± 12.5 . In this study 60% were Male and 40% were female with Male to Female ratio is 1.5:1. Of 100 patient 7 patient were in stage 3 (egfr - 30 to 59ml/min), 22 patients were in Stage 4 (egfr - 15 to 29ml/min), 71 patients were in stage 5.

CKD patient showed following 2DECHO changes –

Table No 1 – Distribution of study cases as per 2DECHO changes

DIALYSIS	HD	NON – HD	TOTAL
YES	42	38	80
NO	12	8	20
TOTAL	54	46	100

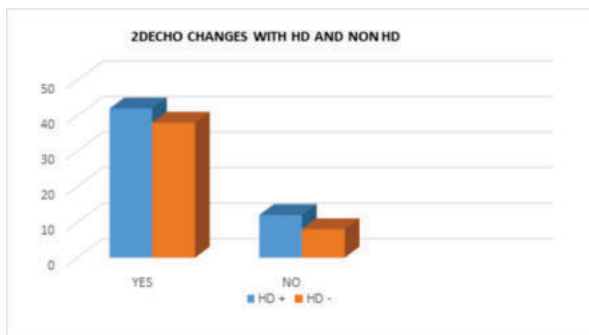


Figure No – 1

Prevalence of 2DECHO changes in case of CKD was observed as 80% in present study

Table No 2 - Distribution of study cases as per 2DECHO finding

2DECHO CHANGES	HD	NON-HD	TOTAL
NORMAL	12	9	21[21%]
ISCHEMIA	8	17	25[25%]
DILATED CHAMBER	3	7	10[10%]
PERICARDIAL EFFUSION	2	4	6[6%]
SYSTOLIC DYSFUNCTION	10	20	30[30%]
LVH	38	20	58[58%]
DYSTOLIC DYSFUNCTION	29	25	54[54%]

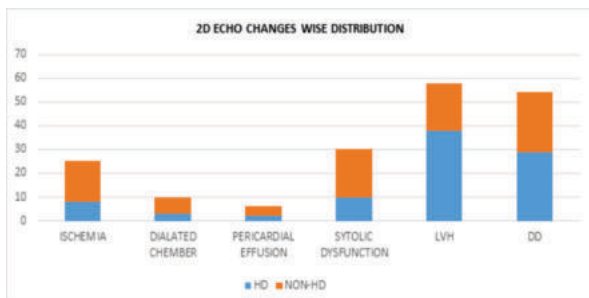


Figure No – 2

LVH was the Most common 2DECHO finding seen in 58 cases (58%) whereas other 2DECHO findings seen are -

- Diastolic Dysfunction was seen in 54 cases (54%)
- Systolic Dysfunction was seen in 30 cases (30%)
- Ischemia was seen in 36 cases (36%)
- Dilated Chamber was seen in 10 cases (10%)
- Pericardial Effusion is seen in 6 cases (6%)

Table No 3 – Association of CKD Stage with presence of 2DECHO changes

CKD STAGES	2DECHO CHANGES		TOTAL
	YES	NO	
I	-	-	-
II	-	-	-

III	6	1	7 (100%)
	85.71%	14.29%	
IV	20	2	22(100%)
	90.9%	9.1%	
V	54	17	71(100%)
	76.1%	23.9%	
TOTAL	80	20	100(100%)
	80%	20%	

p – value – 0.12093

p – value by Chi square test. p – value <0.05 is considered to be statistically significant

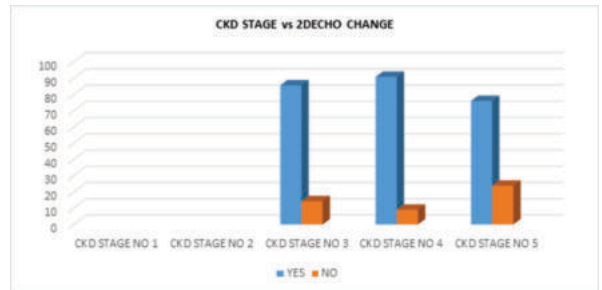


Figure No 3 – CKD Stage v/s 2DECHO changes

A significant association was seen between CKD stage and presence of 2DECHO changes. Prevalence of 2DECHO changes was 85.71% in CKD stage III, 90.9% in CKD stage IV and 76.1% in stage V.

DISCUSSION

Kidney and Heart are linked in terms of Hemodynamic & regulatory functions by association at multiple level like Renin Angiotensin Aldosterone system, Antidiuretic hormone, Endothelin, Sympathetic nervous system & Natriuretic peptides. CKD is associated with high cardio-vascular mortality and morbidity since detrimental effect of CKD commences from early stage. Globally 40% of death in dialysis cases occurring by CVD

Present study thus aimed to evaluate 2DECHO changes in CKD patients of stage 3 & above. Study includes 100 cases of CKD satisfying inclusion & exclusion criteria.

Age In Ckd Patient

Table No 4 – Comparison of Mean Age

MV Krishna, et al [6]	52.5 ± 11.8 year
Sachdeva, et al [8]	57.62 ± 13.7 year
Girish Ronad, et al [7]	52.66 year
C. Ramanan, et al [9]	47.5 ± 12.1
Goornavar SM, et al [10]	47.58 ± 15.3 year
Present study	58.88 ± 12.5 year

The age variation in the present study was 18 -95 years. With the maximum number of the patients in the age group of 41-60 years. The mean age of the study population was 58.88 ± 12.5 year. The mean age of the present study was compared with others studies, the mean age in the other studies was 52.5 ± 11.8 year in MV Krishna et al, 57.62 ± 13.7 year in Sachdeva et al, 47.5 ± 12.1 in C. Ramanan et al.

Gender In Ckd Patient

Table No 5 – Comparison of Male to Female ratio

MV Krishna, et al [6]	2.12: 1
Sachdeva, et al [8]	3:1
C. Ramanan et al [9]	4: 1
Girish Ronad, et al [7]	1.63:1
Goornavar SM, et al [10]	1.08:1
Present study	1.5

In the present study male to female ratio was 1.5. It was 2.12 in MV Krishna et al, 3 in Sachdeva et al, 1.6 in Girish Ronad et al, 4 in C. Ramanan et al.

2d Echo Changes In Ckd Patient

Table No 6 – Comparison Of 2decho Changes In Ckd Cases With Other Studies

2DECHO CHANGES	Raman an et al [9]	MV Krishna et al [6]	Sachdev a et al [8]	Rona d et al [7]	Goornava r SM et al [10]	PRESE NT STUDY
NORMAL	32%	22%	23.3%	6%	14%	20%
LVH	42%	56%	56.7%	59%	58%	58%
ISCHEMIA	12%	14%	15%	6%	16%	25%
PERICARDIAL EFFUSION	6%	8%	8.33%	6%	6%	6%
DIASTOLIC DYSFUNCTION		38%	38.33%	9%		54%
SYSTOLIC DYSFUNCTION		22%	21.67%	36%		30%
DILATED CHAMBER	8%				4%	10%

Prevalence of 2DECHO changes in cases of CKD was observed in 80% in present study. Most common 2DECHO finding were LVH in 58% patient and Diastolic dysfunction in 54% patient. Other 2DECHO findings are Ischemia in 25%, systolic dysfunction in 30%, Dilated chamber in 10%, Pericardial effusion in 6% patients and 2DECHO was normal in 22%. A significant association was seen between CKD stages and presence of 2DECHO changes. Prevalence of 2DECHO changes was 85.71% in CKD stage III, 90.9% in CKD stage IV and 76.1% in CKD stage V. The above observation made in the present study is comparable with studies done by Ramanan et al & Sachdeva et al.

CONCLUSION

Echocardiography is the non-invasive tools which can be used to identify cardiovascular disease early in the course of CKD. Present study observed high prevalence of 2-D echo abnormalities in CKD patients. Left ventricular hypertrophy was the most commonly detected abnormality. In view of the above findings, present study recommends periodic echocardiographic examination for diagnosis and early treatment of cardiac abnormalities in patients with CKD at regular intervals

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