



CARDIAC CHANGES IN CHRONIC KIDNEY DISEASE

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ABSTRACT

Chronic kidney disease is a clinical syndrome due to persistent renal dysfunction leading to excretory, metabolic and synthetic failure culminating in accumulation of non-protein nitrogenous substances and presents with varied clinical features. CKD is defined as abnormalities of kidney structure or function present for three months with implications for health. As soon as the cause for CKD is established, further evaluation is needed to preserve or restore glomerular filtration rate. Evaluation of cardiovascular risk factors is essential because of high rate of cardiovascular complications in CKD. The magnitude of the problem has become more apparent as patient now survive longer on maintenance haemo-dialysis. CAD, congestive heart failure and pericardial disease are the common manifestations of major cardiovascular abnormalities in CKD. GLOBAL BURDEN OF DISEASE STUDY revealed that CKD is the 8th leading cause of death in INDIA. Among these patients cardiovascular disease remains the most common cause of mortality. Structural and functional cardio vascular evaluation is done using x-rays, electrocardiography, echocardiography.

KEYWORDS :**STUDY PROCEDURE:**

This was a descriptive cross sectional study, conducted in patients with CKD by the department of General Medicine, KAMINENI INSTITUTE OF MEDICAL SCIENCES, Narketpally, Nalgonda, Telangana. The study was conducted for 2 years from Sept 2015 to Oct 2017. Sample size 50 patients.

AIM AND OBJECTIVE:

To assess cardiac changes in patients with chronic kidney disease admitted in KAMINENI INSTITUTE OF MEDICAL SCIENCES, using electrocardiography(ECG) and two dimensional echocardiography (2d echo) as diagnostic tools to detect cardiac changes in patients with chronic kidney disease.

INCLUSION CRITERIA:

Patients were diagnosed with chronic kidney disease with age 18 years and above irrespective of etiology and duration.

EXCLUSION CRITERIA:

1. Know cases of rheumatic heart disease/valvular heart disease.
2. Patients with poor pulmonary function
3. Patients with congenital heart disease
4. Age less than 18 years
5. Documented coronary artery disease prior to onset of CKD.

OBSERVATION AND RESULTS:**TABLE 1: SEX DISTRIBUTION OF PATIENTS.**

Sex	Number of patients N=50	Percentage
male	29	58%
female	21	42%
total	50	100%

TABLE2: AGE DISTRIBUTION OF PATIENTS.

Age in years	Male N=29	%	Female N=21	%	Total N=50	%
Less than 20	-	-	1	2	1	2
21-30	-	-	-	-	-	-
31-40	3	6	3	6	6	12
41-50	11	22	8	16	19	38
51-60	9	18	8	16	17	34
Above 60	6	12	1	2	7	14
Total	29	58	21	42	50	100

TABLE 3: DURATION OF CKD.

Duration in months	Male N=29	%	Female N=21	%	Total N=50	%
<12	13	26	11	22	24	48
13-24	12	24	6	12	18	36
25-36	2	4	2	4	4	8
>36	2	4	2	4	4	8
total	29		21	42	50	100

TABLE 4:ETIOLOGY OF CKD:

Etiology	Number of cases	Percentage%
Chronic glomerulonephritis	9	18
hypertension	4	8
Obstructive uropathy	4	8
Diabetic nephropathy	24	48
Chronic interstitial nephritis	7	14
Polycystic kidney disease	2	4
total	50	100

Diabetes mellitus is the most common cause of ckd in this study, which is around 48%.

TABLE 5: DISTRIBUTION OF CASES ACCORDING TO GFR

Egfr(ml/min/1.73sq mt)	NUMBER OF CASES(50)	%
15-29(category G4)	20	40
<15(CATEGORY G5)	30	60

TABLE 6: ECG CHANGES

ECG pattern	Number of patients (N=50)	%
LVH	18	36
Low Voltage Complexes	6	12
LBBB	1	2
Arrhythmia	9	18
Ischemia	16	32
Normal ecg	13	26

LVH was the most common abnormality observed in our study population, which was present in 18 patients . next common abnormality was ischemic changes , which is around 32%.normal ecg is found in 26%of patients.

TABLE 7 :CARDIAC CHAMBER ABNORMALITIES IN ECHO

Finding on echo	Number of patients (n=50)	%
Concentric LVH	24	48
Dilated LV	12	24
Dilated LV and LA	9	18
Dilated RA	-	-
RV abnormality	-	-
All chambers dilated	5	10

Concentric LVH is the most common abnormality found in 48% of the patients in the study group.

TABLE 8 :VALVULAR INVOLVEMENT ON ECHO

Valve involved	Number of patients (50)	percentage
Mitral	16	32
Aortic	5	10
Tricuspid	5	10
Pulmonary	2	4

Among all the valves , mitral valve is the most common valve involved.

TABLE 9 : LV SYSTOLIC DYSFUNCTION ON ECHO

Grade of systolic dysfunction	Number of cases(50)	%
mild	6	12
moderate	7	14
severe	-	-

TABLE 10 LV DIASTOLIC DYSFUNCTION (LVDD) ON ECHO

Grade of diastolic dysfunction	Number of patients (50)	%
Impaired relaxation	25	50
Pseudo normalization	-	-
Restrictive abnormality	-	-

TABLE 11 : PERICARDIAL EFFUSION ON ECHO

Grading of pericardial effusion	Number of patients	percentage
small	8	16%
moderate	-	-
large	-	-

SUMMARY AND CONCLUSIONS

- 50 patients participated in the present study ,in which 58% were males and 42% were female patients.
- 41-50yr age group were the most common affected people in the study .
- Most patients in the study were those who have been diagnosed with ckd in the past 1 year, accounting to 48% of total study population.
- All patients were anemic.mean hemoglobin was 8.608 +/- 1.09.
- Most common etiology was diabetes mellitus, found in 48% of study population.
- LVH was the most common ECG finding noted .it was observed in 36% of study population. Ischemic changes wer next common finding in 32% of study population.
- Echocardiographic detection of cardiac changes wer present in all patients.
- Cardiac changes wer more frequent in those who were in advanced stages of ckd.
- Concentric LVH was the commonest finding on echocardiography,which was seen in 48% of patients.
- Mitral valve was involved in 32% of cases with regurgitation being the most common lesion.aortic stenosis was noted in 10% of lesions.
- LV systolic dysfunction and LV diastolic dysfunction were seen in 26% and 50% of our study population respectively
- Pericardial effusion was seen in 16% patients
- Electrogram is a good tool to document changes in anatomy and effects on coronary circulation
- Transthoracic echocardiography is a sensitive, non

invasive and affordable modality to assess cardiac function in ckd patients.

- Echocardiogram serves as an excellent tool for functional assessment of cardiac status,which takes the main stay of therapeutic decision amd prognostic assessments.it should be regularly used in patients of ckd for early detection of cardiac dysfunction.

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