



STUDY OF CARDIOVASCULAR ABNORMALITIES IN PATIENTS WITH CHRONIC RENAL FAILURE AT NRIGH GUNTUR

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ABSTRACT

Introduction: . Chronic Renal Failure affects every aspect of the lives of the patients who suffer it and involves all systems of body & results in various abnormalities. Today, cardiovascular complications are a major clinical problem in uremic patient accounting for 44% of all deaths in this population. Objectives: The prevalence of cardio vascular disease in chronic renal failure patients admitted, attending OPD and patients undergoing dialysis. To aid in prompt diagnosis and effective management of cardiovascular complications in chronic renal failure cases . **Material and methods:** The data for this study was collected from the one hundred subjects fulfilling the inclusion /exclusion criteria admitted and patients visiting OPD and patients undergoing dialysis in dialysis unit of NRI general hospital. Results: LVH is a major echocardiographic finding in uremic patients. In the present study, the most common cause of CRF in the Severe CRF group was Diabetes plus Hypertension in 47% followed by Diabetes alone in 33% as compared to Moderate CRF group where in Diabetes plus Hypertension accounted for 47%, followed by Diabetes in 47%, whereas in Mild CRF group Diabetes was the cause 38%, followed by Diabetes plus Hypertension in 33% of cases. **conclusion:** The high prevalence of Left ventricular hypertrophy in these populations on echocardiography implies that these patients require detailed cardiovascular evaluation despite absence of symptoms, and also that various efforts aimed at prevention and control of left ventricular hypertrophy should be started early during the course of renal insufficiency, such as effective control of hypertension, anaemia.

KEYWORDS : chronic renal failure, left ventricular hypertrophy, diabetes, hypertension

INTRODUCTION

Chronic Renal Failure (CRF) is one of the common conditions which a physician comes across in day to day practice. Chronic Renal Failure affects every aspect of the lives of the patients and involves all systems of body & results in various abnormalities.^{1, 2, 3} End stage renal disease and cardiac disease seem to be inextricably linked. Of various causes, infection and cardiovascular events contribute towards large proportion of increased morbidity and mortality.² 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.^{12, 23} Today, cardiovascular complications are a major clinical problem in uremic patients accounting for 44% of all deaths in this population.^{12, 21, 22, 25, 29, 39, 47}

Death from cardiac causes is 10- 20 times more common in patients with renal failure than in matched segments of the general population. Left Ventricular Hypertrophy (LVH) is a major Echocardiographic finding in Chronic Renal Failure (CRF)^{1, 3, 30, 38}. Prevalence of LVH increases with decline of renal function.⁵ Left ventricular hypertrophy is an independent predictor of survival, present in approximately 70% of patients at the initiation of dialysis.^{5, 33, 37} Echocardiography should be performed early in the course of CRF and may be valuable in the monitoring of therapy of these patients.³ Data available suggests that age, sex, hypertension, anaemia are significantly associated with LVH and they are independent risk factors

AIM AND OBJECTIVES:

1.The prevalence of cardio vascular disease in chronic renal failure patients admitted, attending OPD and patients undergoing dialysis in dialysis unit of NRI Hospital, chinakani

2.To aid in prompt diagnosis and effective management of cardiovascular complications in chronic renal failure cases.

CASE STUDY:

The data for this study was collected from the one hundred subjects fulfilling the inclusion /exclusion criteria admitted and patients visiting OPD and patients undergoing dialysis in dialysis unit of NRI general hospital Cross sectional prospective study.

INCLUSION CRITERIA:

The study population consists of patients with mild, moderate and

severe Chronic Renal Failure attending the hospital. Where in^{1, 2}

- Mild Chronic Renal Failure - includes patients with Serum Creatinine 1.5-3 mg/dl.
- Moderate Chronic Renal Failure –includes patients with Serum Creatinine values 3.0-6.0 mg/dl and
- Severe Chronic Renal Failure - includes patients with Serum Creatinine value > 6 mg/dl

EXCLUSION CRITERIA:

- Patients with other cardiac disorder such as valvular heart disease, congenital heart disease.
- All pediatric cases of chronic renal failure.

RESULTS:

1.Age Distribution:

Table – 1: Showing age distribution of 100 cases of chronic renal failure

Age group (years)	Frequency	Percentage
31-40	4	4%
41 – 50	16	16 %
51 – 60	30	30 %
61 – 70	40	40 %
71 – 80	10	10 %
Total	100	100

Gender Distribution:

Table 2: Showing the Gender Distribution

Gender	Frequency	Percentage
F	33	33 %
M	67	67 %
Total	100	100

3. Etiology of CRF:

Table – 3: Showing the etiology of chronic renal failure

Etiology of Chronic renal failure	Frequency	Percentage
Diabetes + Hypertension	44	44 %
Diabetes Mellitus	39	39 %
Hypertension	13	13 %
APKD	2	2 %

Chronic glomerulonephritis	1	1 %
Obstructive	1	1 %
Total	100	100 %

4. Serum Creatinine levels:

Table – 4: Showing the Distribution of Serum Creatinine

Level of serum Creatinine (mg/dl)	Frequency	Percentage
1.5 - 3.0 (Mild CRF)	20	20 %
3.0 - 6.0 (Moderate CRF)	40	40 %
> 6.0 (Severe CRF)	40	40 %
Total	100	100

5. Electrocardiographic Changes in CRF:

Table – 5: Showing the Electrocardiographic Changes

Particulars	Frequency	Percentage
LVH	63	63 %
ST-T changes	30	30%
NO LVH	31	31 %
Low voltage complexes	6	6%

6. Echocardiographic Findings in CRF:

Table – 6: Showing the Echocardiographic Findings

Particulars	Frequency	Percentage
Concentric LVH	48	48%
Eccentric LVH	21	21%
Diastolic dysfunction	42	42%
Systolic dysfunction	20	20%
Pericardial effusion	20	20%
Normal	31	31%

7. Comparing with severity of CRF with Presence of LVH on 2D-Echo:

Table – 7: Showing the data comparing with severity of CRF with presence of LVH or not on Echo:

SEVERITY OF CRF	LVH	%	NO LVH	%
MILD CRF	12	17 %	9	29 %
MODERATE CRF	18	26 %	17	55%
SEVERE CRF	39	57 %	5	16 %
TOTAL	69	100 %	31	100 %

DISCUSSION:

Premature cardiovascular disease is a significant cause of morbidity and mortality among patients with CRF. Four main structural abnormalities of the heart have been described in patients with CRF: 1) LV hypertrophy, 2) Expansion of the nonvascular cardiac interstitium leading to inter-myocardiocytic fibrosis, 3) Changes in vascular architecture, and 4) Myocardial calcification. All these abnormalities promote systolic as well as diastolic LV dysfunction which predisposes to symptomatic heart failure, which is a risk factor for premature death. Various diagnostic modalities, non-invasive such as electrocardiography, echocardiography are utilized for diagnosing cardiovascular function. Echocardiography provides an excellent non-invasive method to delineate details of the anatomy of cardiac cavity, wall dimensions and wall movements. It is now increasingly used in the assessment of cardiac performance and is also invaluable in the demonstration of structural abnormalities such as LVH and pericardial effusion. Left ventricular hypertrophy is the single strongest independent predictor of adverse cardiovascular events. LVH is a major echocardiographic finding in uremic patients. In the present study, 12 (17%) patients of mild, 18 (26%) patients of moderate and 39 (57%) patients of severe Chronic Renal Failure group had Left Ventricular Hypertrophy. Parfrey PS, Foley RN, Harnett JD, Kent GM, Murray DC, Barre PE conducted study on 432 end-stage renal disease patients who survived at least 6 months had an echocardiogram on initiation of dialysis therapy. On initiation of ESRD therapy 16% of patients had systolic dysfunction, 41% concentric LV hypertrophy, 28% LV dilatation, and only 16% had normal echocardiograms.

CONCLUSION: The present study shows that patients with chronic renal failure have higher left ventricular mass index and higher prevalence of left ventricular hypertrophy (LVH), which is more marked in patients with severe renal failure. The high prevalence of Left ventricular hypertrophy in these populations on echocardiography implies that these patients require detailed cardiovascular evaluation despite absence of symptoms, and also that various efforts aimed at prevention and control of left ventricular hypertrophy should be started early during the course of renal

insufficiency, such as effective control of hypertension, anaemia. The progressive increase in the prevalence of LVH as a function of declining renal function is important information for planning the timing of interventions.

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