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Original Research Paper

General Medicine

ECHOCARDIOGRAPHIC FINDINGS IN PATIENTS WITH END STAGE RENAL DISEASE UNDERGOING HEMODIALYSIS

Shilpa Gadade Junior Resident, Department Of General Medicine, D.y. Patil Medical College And Hospital, Navi Mumbai

Smita patil* Professor, Department Of General Medicine ,d.y. Patil Medical College And Hospital, Navi Mumbai *Corresponding Author

ABSTRACT

INTRODUCTION: Chronic kidney disease (CKD) has emerged as a major public health problem .most common causes of CKD are diabetes and hypertension.[1] Hypertension is cause as well as effect of CKD.CKD is risk for adverse cardiovascular events .Criteria for CKD (either of the following present for >3 months) is as follows: Markers of kidney damage (one or more) - Albuminuria (AER >or equal to30 mg/24 hours; ACR >or equal to30 mg/g >or equal to 3 mg/mmol]) [2]

AIMS AND OBJECTIVES: To asses echocardiographic changes in patients of end stage renal disease undergoing hemo dialysis

MATERIALS AND METHODS: This prospective observational study was conducted in Department of General Medicine, D.Y Patil Hospital, Nerul, Navi Mumbai. The study was started after the approval of Institutional Ethics Committee. A written signed informed consent was taken prior to enrolling the subjects in the study. A total of 140 patients presenting with symptoms of ESRD on hemodialysis was taken. Detailed history and through examination was done.

KEYWORDS : Esrd (end Stage Renal Disese)/echocardiography/lvh (left Ventricular Hypertrophy

REVIEW OF LITERATURE

The increased cardiovascular risk associated with ESRD has been well established, and estimated cardiovascular mortality rates are ten to one hundred fold higher among dialysis patients than age- and sex-matched individuals in the general population. The cardiovascular risk associated with renal impairment increases earlier in the course of renal disease progression than was initially hypothesized. More specifically, there are evidences that even mild to moderate degrees of renal impairment are associated with increased cardiovascular risk. Many traditional cardiovascular risk factors, documented in the general population, contribute to cardiovascular risk in CKD patients. In fact, many Framingham risk factors are more prevalent among individuals with CKD than those with normal kidney function. [3]

Hypertension is cardiovascular risk factor which contributes to the cardiovascular risk associated with CKD. Szcech and colleagues demonstrated that patients with hypertension are susceptible to increased risk for new or recurrent cardiovascular events in individuals with stage 2–3 CKD.[7] Systolic blood pressure is more strongly associated with cardiovascular death in ESRD patients on dialysis than either pulse or diastolic pressure. However, a U-shaped relationship found between systolic blood pressure and mortality in which high or low systolic blood pressures appear to be associated with increased mortality rates in stage 5 CKD patients.

The presence of left ventricular hypertrophy (LVH) is also a cardiovascular risk determinant in CKD patients. Anemia and hypertension are two CKD associated complications hypothesized to play a significant role in the development of LVH. [8] In a cohort of 2,423 patients with stage 3–4 CKD, investigators noted an independent risk of LVH for the composite endpoint of myocardial infarction and fatal coronary heart disease. Patients were followed over a period of 102 months. In adjusted analysis, LVH was associated with increased risk for composite and cardiac outcomes hazard ratio (HR 1.67; 95% CI 1.34 to 2. 07).Addictions like tobacco use is also associated with increased mortality and incidence of heart failure among patients with stage 5 CKD. [24]

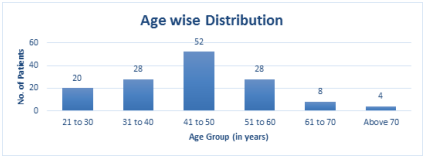
RESULTS

In our study of ESRD patients out of 140 patients 68 (48.6%) were male and 72 (51.4%) were female. In our study maximum patient were between 41 to 50 years of age 52 (37%) out of 140.

Table no.1 Distribution patients according to the age

Age Group (years)	Number of Patients	Percentage
21 to 30	20	14.3
31 to 40	28	20.0
41 to 50	52	37.1
51 to 60	28	20.0
61 to 70	8	5.7
Above 70	4	2.9
Total	140	100.0

Figure no.1 Distribution patients according to the age

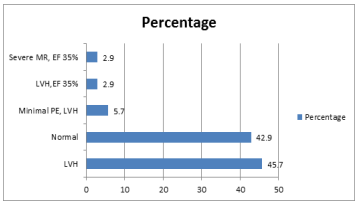


In our study out of 140 patients LVH was present 64(45.7%) patients, 2 decho was normal in 60(42.9%),reduced ejection fraction in 4(2.9%), valvular heart disease in 4(2.9%).

Table 2: Findings on 2D ECHO

Findings	No. of Patients	Percentage
LVH	64	45.7
Normal	60	42.9
Minimal PE ,LVH	8	5.7
LVH,EF 35%	4	2.9
Severe MR EF 35%	4	2.9
Total	140	100.0

Figure no.2: Percentage of 2D ECHO findings in ESRD



DISCUSSION

In our study of ESRD patients out of 140 patients 68 (48.6%) were male and 72 (51.4%) were female in a similar study by Rajapurkar et al. 2012 on first report of indian CKD registry ,The mean age was 50.1 ± 14.6 years, with M:F ratio of 70:30. Patients from North Zone were younger and those from the East Zone older. [4] Comparing to this study in our study percentage of female patients more than that of male .

In our study maximum patient were between 41 to 50 years of age 52 (37%) out of 140. Study by P.P. verma et al 2015 published from a rural belt of Karnataka. The population had a mean age of 39.88 ± 15.87 years. Study by agraval et al mean age was 42+/-13, singhal et al. was 45 +/-15 .the age group of our study was more or less similar to that of agraval et al study. [5]

In our study out of 140 patients LVH was present 64(45.7%) patients, 2decho was normal in 60(42.9%),reduced ejection fraction in 4(2.9%), valvular heart disease in 4(2.9%). Dhamija JP, Saxena N, et al in their study Out of 35 ESRD patients, echocardiography revealed LV dilatation and dias tolic dysfunction in 18 patients (51.2%) , LV hypertrophy in 17 patients (48%), systolic dysfunction and pericardial effusion in 10 patients (28.57%) and 6 patients (17.14%) respectively. [6] The percentage of LVH more or less similar to our study .In their study Hypertensive patients were 27 of 35 ESRD patients, 13 out of 27 had higher prevalence of LVH (51.85%). Systolic dysfunction and RWMA was absent in normotensive group. Concluding that LV diastolic dysfunction and hypertrophy were most common echocardiographic findings. [6]

CONCLUSION

ESRD causes structural and functional abnormality contri buting to major cardiovascular events.most common finding was LVH. Hypertension and anemia are the other risk factor to aggravate this condition .Hence LVH is having prognostic importance detects early changes in cardiac parameters. Screening of patients with ESRD adds a therapeutic as well as prognostic importance.

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