Original article:

Study of clinical profile of cardiac involvement in end stage renal disease.

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Abstract:

Introduction: 30% of patients reaching ESRD already have clinical evidence of ischemic heart disease or heart failure. Furthermore, it is important to note that patients with a reduced glomerular filtration rate (GFR) are more likely to die of CVD than they are to develop ESRD.6 Heart failure accounts for 15% of this dialysis associated mortality, myocardial infarction for about 10%, pericarditis for about 3%. With this view present work was done to study Clinical study of cardiac involvement in end stage renal disease.

Materials and methods : 70 consecutive patients of end stage renal disease of any etiology of chronic kidney disease stage 5 who were admitted in the medical wards and dialysis unit in Dr D.Y. Patil Medical College and Research Centre, Pimpri, Pune. Echocardiography machine GE LOGIQ 400 PRO was used with 3-5 MHz transducer probe. Two dimensional echocardiography and M- mode echocardiography per fonned.

Observations and results: The most common sign in ESRD was Pallor in 100% patients.. Then oedema (72.9%), HTN (70%), raised JVP (37.1%), pericarditis (7.1 %), murmur (12.9%), pleural effusion (22.9%) were present in ESRD patients.

Conclusion: In this study, symptoms and sign related to cardiovascularsystem are evident in majority of patients.

Introduction:

The magnitude of the problem has become more apparent as patients survive longer on maintenance hemodialysis.Y Coronary artery disease, myocardial infarction, congestive heart failure and pericardia! Diseases are the common manifestations of major cardiovascular manifestations in the end- stage renal disease. [1] 30% of patients reaching ESRD already have clinical evidence of ischemic heart disease or heart failure. Furthermore, it is important to note that patients with a reduced glomerular filtration rate (GFR) are more likely to die of CVD than they are to develop ESRD.6 Heart failure accounts for 15% of this dialysis associated mortality, myocardial infarction for about 10%, pericarditis for about 3%.[2] Sudden cardiac death may be related to the high prevalence of left ventricular dysfunction secondary to the left ventricular hypertrophy in dialysis patients.[3] Both traditional and non-traditional risk factors play a role in the aetiology of these cardiac problems..[4] Many patients with CKD die prematurely before or after beginning dialysis. Reasons for these adverse associations are not well understood. Whether CVD events differ in patients with and without CKD is poorly defined. The relative importance of nontraditional risk factors for CVD in CKD is not well defined. Similarly, whether differences in CVD in CKD patients suggest preventative or therapeutic strategies unique to this population is unclear.

With this view present work was done to study Clinical study of cardiac involvement in end stage renal disease.

Materials and methods :

70 consecutive patients of end stage renal disease of any etiology of chronic kidney disease stage 5 who were admitted in the medical wards and dialysis unit in Dr D.Y. Patil Medical College and Research Centre, Pimpri, Pune.

Inclusion criteria

1. All of the patients were previously diagnosed as having chronic kidney disease on the basis of ultrasound and decreased creatinine clearance for more than 3 months.
2. Patients in end stage renal disease stage 5 (GFR less than 1 Sml/min per 1.73 m2)
3. Patients on haemodialysis or with renal transplantation.

Exclusion criteria

1. Pre-existing heart disease like rheumatic heart disease, congenital heart disease.
2. Other pre-existing cardiovascular disease like myocarditis due to virus, diphtheria and other infection.
3. Primary heart muscle disease like primary cardiomyopathy.

i. General physical examination includes pulse, blood pressure, respiratory rate, pallor, oedema, JVP, fundus examination. Blood pressure more than 140/90 mm Hg was considered as hypertension.

ii. Grading of pallor was done. '+'mild Pallor, '++' moderate Pallor, '+++' severe pallor.

iii. Systemic examination: special emphasis was given to cardiovascular system.

Observations and results:

Table.1. Symptoms suggesting cardiovascular involvement of ESRD study cases.

Symptoms		
Breathlessness		
Swelling of legs/face		
Easy fatigability	28	
Chest pain	11	15.7
Palpitation	7	10.0
Decrease urine output	34	48.6

- The most common symptom in ESRD patients was breathlessness (84.3%).

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- Then swelling of face & legs (71.4), easy fatigability (40%), chest pain (15.7%), palpitation (10%) and decreased urine output (48.6%)

Table.2. Signs suggesting cardiovascular involvement of ESRD study cases.

Signs	No. of cases	
Pallor	70	100.0
Oedema	51	
Hypertension	49	70.0
JVP	26	37.1
Pericarditis	5	7.1
Murmur	9	12.9
Pleural effusion	16	22.9

The most common sign in ESRD was Pallor in 100% patients.. Then oedema (72.9%), HTN (70%), raised JVP (37.1%), pericarditis (7.1 %), murmur(12.9%), pleural effusion (22.9%) were present in ESRD patients.

Discussion:

In this study, symptoms and sign related to cardiovascular system are evident in majority of patients. The common symptoms in the present study were breathlessness (84.3%), swelling of face & legs (71.4), easy fatigability (40%), chest pain (15.7%), palpitation (10%). Pallor was present in 100%, oedema (72.9), HTN (70%), raised *NP* (37.1%) suggesting fluid overload or right heart failure, pericarditis (7.1 %), murmur (12.9%), pleural effusion (22.9%). Robert N. Foley et al (1995) studied clinical manifestations of cardiovascular disease in ESRD.[5] They found 19% angina pectoris, 31 % cardiac failure, 7% dysrrhythmia. N.P.singh et al (1999)158 noticed clinical manifestation in CRF patients: 54% had breathlessness, swelling of face & feet 80%, easy fatigability in 40%, pallor (100%), edema (80%), HTN (82%), pericarditis (15%), and pleural effusion (7%). The above findings were consistentwith our study.

In the present study LVH was present in 87.5%, diastolic dysfunction was present in 72.9% (abnormal E/A ratio) , systolic dysfunction (EF<50%) was present in 29.2% and pericardia! effusion observed in 14.6% hypertensive patients. In normotensive group LVH was present in 45.5%, diastolic dysfunction was present in 40.9%, and systolic dysfunction was present in 13.6% andpericardia! effusion observed in 13.6% patients.

There is statistically significant association between the clinical findings of 2D - Echo and patients having hypertension in case of LVH and abnormal E/A ratio parameters only, since $p < 0.01$ and < 0.05 respectively. For rest of the findings, no significant association observed; but hypertensive group is dominant m case of remaining findings than Normotensive group i.e. proportion of patients is more 111 hypertensive group than Normotensive group for each remaining parameter.

Gupta et al (1995) carried out a study on 31 hypertensive and 15 normotensive cases of CRF. [6] They found that left ventricular hypertrophy in hypertensive and normotensive patients was not statistically

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significant. Patrick Set al (1999) had found that rise in mean arterial blood pressure is associated with increased in LVH.[7]

Levin A et al (1996) found that 3% increase risk of LVH, as an increase in systolic blood pressure of 5 mm Hg in CRF patients. [8]Alberto Martinez et al (2004) found that patients with an exaggerated systolic BP had a greater LVM index than those with a normal exercise systolic BP response (112.1 ± 10.4 versus 84 ±19.2 g/m2, respectively. Juan M.et al (1998) had found mean E wave cm/sec 95.6 ± 31.4, A wave cm/sec 86.1 ± 20.0, FS Shortening% 33.7 ± 14.9, Ejection fraction 45.9 ± 16.4 in hypertensive patients which had statistically difference from normotensive patients.[9]

Conclusion:

In this study, symptoms and sign related to cardiovascular system are evident in majority of patients.

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