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THIRD AND SIXTH MONTH SURVIVAL AND FUNCTIONAL STATUS OF PATIENTS WITH CHRONIC KIDNEY DISEASE INITIATED ON HEMODIALYSIS AFTER THE AGE OF 80 YEARS IN A SOUTH INDIAN TERTIARY CARE HOSPITAL

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Abstract

Background: Old age and associated comorbidities pose serious obstacles to achieving favourable outcomes inhemodialysis patients, which need to be factored in while taking treatment decisions.

Aim:A retrospective observational study of survival and functional status of patients, who had reached 80 years at the time of initiation of chronic maintenance hemodialysis, was done in the nephrology unit of a South Indian tertiary care hospital.

Material & Methods: Baselinedemographics, presence of comorbidities, indications for initiating dialysis andfunctional status of the patient at the time of initiationwere recorded. Survival and functional status of these patients at 3 months and 6 monthsafter initiation were thenrecorded.

Results: In this study 24 (75%) patients were male and 8 (25%) were female. All the 32 (100%) patients had hypertension, while 28 (87.5%), 11 (34.37%) and 5(18.75%) were suffering from diabetes mellitus, coronary artery disease and left ventricular failure respectively. Most common indication for dialysis was pulmonary oedema 15 (46.87%) followed by uremic encephalopathy 6 (18.75%), while uremic pericarditis and metabolic acidosis contributed to initiation of dialysis in 1 patient each (3.12%).In 8 (25%) patients an elevated serum creatinine was the only indication for starting dialysis. The functional status at the time of initiation of dialysis was 13 (40.62%) ambulant patients and 19 (59.37%) partially dependentpatients, while 0 were bedridden. Of these, 19 (59.37%) patients died within 3 months of initiation of dialyisis.Functional status of thepatients at 3 months were ambulant 8 (25%), partially dependent 3 (9.37%) andbedridden 2 (6.25%).At the end of 6 months,a total of 24 (75%) patients were dead.Functional status of the patients at 6 months were ambulant 6 (18.75%), partially dependent 2 (6.25%) andbedridden 0 (0%).

Conclusion: Patientsinitiated onmaintenance hemodialysis after the age of 80 years tend to have very poor outcomes in terms of survival and functional status.

Key words: Renal disease, Haemodialysis, Nephrology,Uremic encephalopathy,Hypertension

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INTRODUCTION

Increasing numbers of elderly people with end-stage renal disease (ESRD) are nowadays undertaking haemodialysis treatment. [1] Those aged 75 years or more represent the fastest growing segment of the population starting maintenance haemodialysis. In France, 37.9% of patients who started haemodialysis in 2009 were older than 75 years.[2] Despite being a potentially life-saving treatment, the physical and psychosocial burdens associated with dialysis in the elderly usually outweigh the benefits of correcting uraemia. A growing body of data shows that, in patients with high comorbidity, the benefits may be offset by high dialysis-related morbidity, thus impacting the quality of life and survival.[3] Decision to offer chronic maintenance haemodialysis therapy to those chronic kidney disease patients aged 80 years and above should ideally factor-in all these parameters. Unfortunately, there are very few studies to guide clinicians, patients and caretakers to take appropriate decisions in this regard. The present study is an attempt to fill that void in knowledge.

MATERIALS AND METHODS

Study period
Retrospective observational study from 1st Jan 2016 to 31stDecember 2019
Duration of the study:6 months
Inclusion criteria

- All patients who were 80 years or above at the time of initiation of maintenance haemodialysis at Pushpagiri Medical college Hospital. Kerala, India
- Patients who were taking regular haemodialysis at the rate of at least 8 hours a week.

Exclusion criteria

- Patients who had recent Myocardial infarction, stroke, septicaemia or requirement of ventilatory and other life supports within the last 2 months of enrolment into the study.
- Patients with terminal illnesses like malignancy
- Patients with an on-going focus of infection
- Patients with a suspected reversible component of renal failure
- Patients who were taking dialysis irregularly
- Patients who were lost to follow up.

Observations

- Baseline characteristics of the population - mean age, gender distribution, proportion with diabetes, hypertension, CAD, Left Ventricular Dysfunction
- Mean serum creatinine at the time of initiation, functional status of the patient at the time of initiation- bedridden, partially dependent or ambulant
- Indications for initiation of dialysis – hyperkalaemia, metabolic acidosis, encephalopathy, pulmonary oedema, pericarditis, nonclinical indications.
- Mortality at 3 months and 6 months
- Proportion of bedridden, partially dependent and ambulant patients at 3 months & 6 months.

Statistics
Percentage was calculated for each of the parameters considered

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RESULTS

In this study, males were 24 (75%) and females were 8 (25%) with mean age of 96.78 **(Table 1)**

Table 1. Demography

Male	Female	Mean
24 (75%)	8 (25%)	86.78

All the 32 (100%) patient were suffering from hypertension (100), while 28 (87.5%), 11 (34.37%) and 5(18.75%) were suffering from diabetes mellitus, coronary artery disease and left ventricular failure respectively as per co-morbidity profile**(Table 2).**

Table 2. Co-morbidity profile

Co-morbidities	Numbers	Percentages
Diabetes mellitus	28	87.5
No diabetes	4	12.5
Hypertension	32	100
No hypertension	0	0
Coronary Artery Disease	11	34.37
No coronary Artery Disease	21	65.62
Left ventricular failure	5	15.62
No left ventricular failure	27	84.37

Most common indication for dialysis was pulmonary oedema 15 (46.87%), elevated creatinine 8 (25%), uremic encephalopathy 6 (18.75%), while uremic pericarditis and metabolic acidosis constitute 1 (3.12%)**(Table 3).**

Table 3. Indication for initiation of dialysis

Indications	Numbers	Percentages
Hyperkalaemia	2	6.25
No hyperkalaemia	30	93.75
Metabolic acidosis	1	3.125
No metabolic acidosis	31	96.87
Uremic encephalopathy	6	18.75
No Uremic encephalopathy	28	87.5
Pulmonary oedema	15	46.87
No pulmonary oedema	17	53.12
Uremic pericarditis	1	3.125
No uremic pericarditis	31	96.87
Elevated creatinine [in the absence of other clinical indications]	8	25
No elevated creatinine	24	75

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The functional status at the time of initiation of dialysis was 13 (40.62%) for ambulant, 19 (59.37%) and bedridden were 0**(Table 4& Fig 1)**.

Table 4. Functional status of patient at the time of initiation of dialysis

Functional status	Numbers	Percentages
Ambulant	13	40.62
Partially dependent	19	59.37
Bedridden	0	0

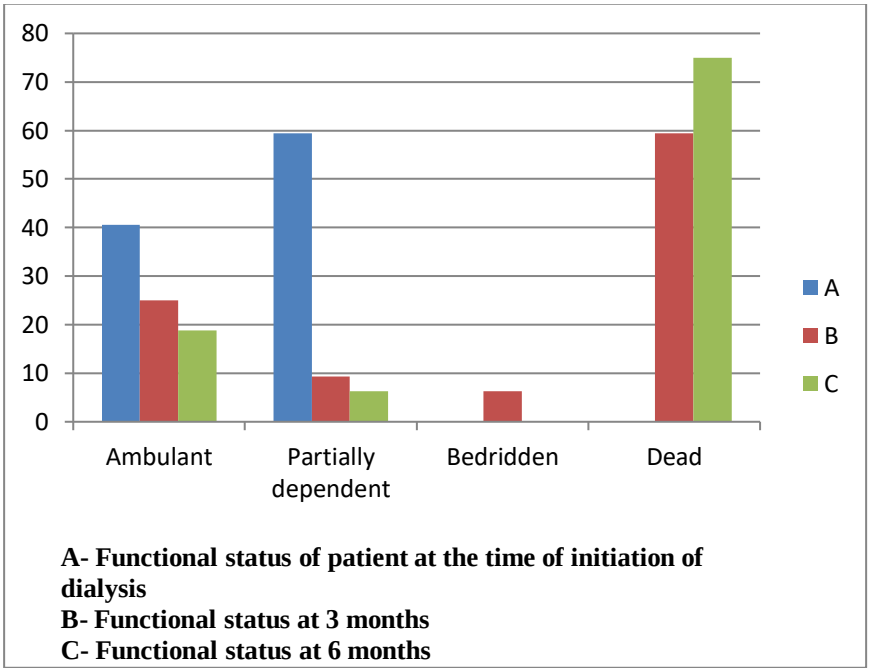

Fig.1 Functional status

Functional status of patient at 3 months after initiation of dialysis were ambulant 8 (25%), partially dependent 3 (9.37%), Bedridden 2 (6.25%) and 19 (59.37%) bedridden**(Table 5& Fig 1).**

Table 5. Functional status at 3 months

Functional status	Numbers	Percentages
Dead	19	59.37
Bedridden	2	6.25
Partially dependent	3	9.37
Ambulant	8	25

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Functional status of patient at 6 months after initiation of dialysis were ambulant 6 (18.75%), partially dependent 2 (6.25%), Bedridden 0 (0%) and 24 (75%) bedridden**(Table 6& Fig 1).**

Table 6. Functional status at 6 months

Functional status	Numbers	Percentages
Dead	24	75
Bedridden	0	0
Partially dependent	2	6.25
Ambulant	6	18.75

The survival status of the patients at 3 months after initiation of dialysis were, alive 13 (40.62%) and dead 19 (59.37%) and but survival status at 6 months, 8 (40.62%) were alive while 24 (75%) were dead**(Table 7& Fig 2).**

Table 7. Survival at 3& 6 months after initiation of dialysis

Survival status	Numbers& Percentage			
	At 3rd month		At 6th month	
	Number	%		
Alive	13	40.62	8	25
Dead	19	59.37	24	75

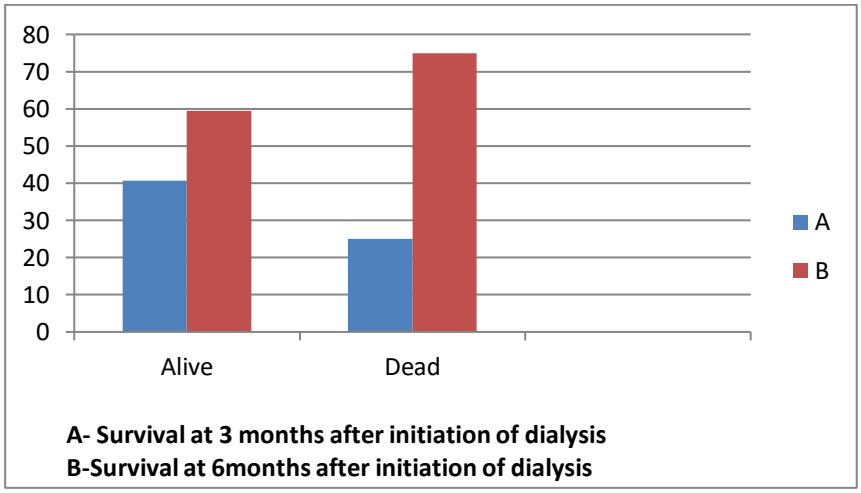

Fig.2 Survival Status

DISCUSSION

Individual case-based decision to offer maintenance haemodialysis therapy is a well-established concept in the treatment of end-stage kidney failure, and chronological age should not be the sole criteria for clinicians to decide whether to offer this life-sustaining therapy or not. However, elderly patients are far from ideal candidates for maintenance haemodialysis, owing to their underlying comorbidities, difficulties in maintaining a long-term vascular access, problems related to anticoagulation, and the generalized immunocompromised state[4]. Compared to that, conservative management is less invasive

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and avoids the hemodynamic and other adverse effects associated with haemodialysis. There are reports from some authors that anintegrated clinical management, including nutritional management and optimization of medications, offers survival rates that are comparable to those obtained with maintenance dialysis. One observational study in 2013found that, for patients aged over 80 yearswith poor performance status or high comorbidity-scores, the survival advantage of dialysis over conservative management was lost at all levels of disease severity.[5]

A common consequence of starting haemodialysis in any age group is the rapid decline in residual renal function, a factor which plays a critical role in the survival of dialysis patients in general. Since this decline is even more critical in the elderly, some groups have advocated a philosophy of maximum conservative care, with the aim of preserving residual renal function, and graduation ofdialysis according to individual clinical needs and accompanying comorbidities.[6] Unfortunately, there are only limited data on the determinants of survival, the degree of physical–functional fitness and social–emotional well-being of elderly haemodialysis patients.

A single-centre study from Toronto, Canada reported that within the first 6 months after dialysis was begun, more than 30% of elderly patients had functional loss requiring community or private-caregiver support or transfer to a nursing home.[7] In another single-centre retrospective study from Croatia, involving 78 octogenarians on haemodialysis, it was found that 30.8% patients survived 12 months, 29.5% patients survived 12−24 months, 30.8% patients survived 24−60 months, and 9% patients survived 60 months on maintenance haemodialysis. Patients with high C-reactive protein levels and poor nutritional status, as well as those who did not have pre-dialysis nephrology care and those that had a catheter as vascular access for hemodialysis had poor survival. However, this study did not report the functional status of its patients before and after starting haemodialysis.[4]

Carson et al conducted a study of 202 elderly patients with End Stage Renal Disease and found higher median survival (38 versus 14 months) among those who underwent hemodialysis treatment versus patients treated conservatively.[8] However, Kurella et al showed a decreasing mean survival after hemodialysis initiation in the older population: 24.9 months in those aged 65−79 years, 15.6 months in those aged 80−84 years, 11.6 months for those 85−89 years, and 8.4 months in those aged 90 years and older.[9] In an analysis of 11 years of data from 139 octogenarians undergoing haemodialysis at Birmingham, the mortality at 90 days was found to be 30 %. But among those who survived beyond 90 days, majority had a good long-term outcome.[10]

Because age, functional status, nutritional status, and comorbidities affect the net balance between benefits and burdens on elderly patients on maintenance haemodialysis, it is imperative for the clinician to discuss all these determinants with the patients and caretakers before contemplating this expensive and resource-intensive therapy. The data on that front is very limited, that too coming mostly from developed countries. In this context, the present study done in a developing country analysedthe survival and functional status of elderly chronic kidney disease patientswho were initiated on maintenance haemodialysis after they had reached the age of 80 years.

The present study specifically highlights the survival and functional status of patients at 3 months and 6 months after their initiation of maintenance haemodialysis. In this study, 75 % of patients were males, all of them had hypertension, 87.5 % had diabetes, 34.37 % had coronary artery disease and 18.75% had significant left ventricular systolic dysfunction on 2 D echocardiography. This translates to a much higher co-morbidity burden than the regular cohorts of haemodialysis patients. Moreover, close to 60% of patients in this study were dependent on others at the time of initiation of their dialysis.

On an average, 46 % of patients were started on dialysis because of pulmonary oedema, while another 18 % were dialysed because of uremic encephalopathy. Altogether, 75 % of patientswere started on dialysis because of one life-threatening clinical indication or the other, and only 25 % of them were initiated solely based on biochemical criteria. This is quite different from the scenario in developed countries, where the majority of such patients have a planned initiation of dialysis based on pre-specified biochemical criteria. That probably explains the poor overall survival of our patients, which stands at 40.62 % at 3 months and only 25 % percent at 6 months. Even among those who survived, the functional outcomes were too dismal. While the number of ambulant patients at the time of initiation of hemodialysis was 13 (40.62%), it dropped to 8 (25%) at the end of 3 months, and 6 (18.75%) at the end

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of 6 months. That means only 12.5 percent of the whole cohort who were initiated on hemodialysis after the age of 80 years could lead an independent life at the end of 6 months.

CONCLUSION

This study shows that patients initiated on maintenance haemodialysis after the age of 80 years tend to have very poor outcomes in terms of survival and functional status. While it is true that proper pre-dialysis nephrology care and planned initiation of haemodialysis much before symptoms develop could improve the survival in some settings, the overall outcomes of these patients in a resource-limited country is extremely poor. Awareness of the same might help the clinicians, patients and caretakers to take informed decisions regarding the timing of initiation of dialysis, and to decide whether the so called maximum conservative management would suite the best interests of these patients**.**

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