

Research Article

Refusal for Hemodialysis and Outcome in Chronic Kidney Disease Patients

Muhammad Anees¹, Yasir Hussain², Muhammad Ibrahim³, Khushbakht Shujat⁴, Nouman Tarif⁵

¹Professor of Nephrology, KEMU/ Mayo Hospital, Lahore; ²Assistant Professor of Nephrology, PGMI/ Lahore General Hospital, Lahore; ³Associate Professor of Statistics, Govt. M.A.O College, Lahore; ⁴Renal Technologist, King Edward Medical University, Lahore; ⁵Professor of Nephrology, Fatima Memorial Hospital, Lahore

Abstract

Background: Chronic kidney disease (CKD) is a major burden of chronic illnesses. It has been observed that majority of the patients refuse hemodialysis leading to very high mortality even in younger ones.

Objective: This study was conducted to determine the effect of refusal of hemodialysis on survival in CKD patients.

Methods: Prospective study was done in Nephrology Department of Mayo and Shalamar Hospital, Lahore. Patients presenting in Nephrology Out Patient Department with the indication of dialysis were included in the study. Patients with acute kidney Injury and with loss of follow up were excluded from the study. Patients were divided in two groups, patients who accepted hemodialysis and patients who refused dialysis. Both groups were followed up for outcomes mortality at one, three and twelve months.

Results: Total number of the patients was 118. Major cause of CKD was Diabetes Mellitus 54(45.8%) followed by Hypertension 45(38.1%). Patients who accepted hemodialysis were 59(50%). Overall mean survival days of the patient were 151 ± 129 in all patients. Patients who opted for dialysis survived longer as compared to patients who refused dialysis (200 vs 112 days) ($p < 0.0004$). Highest mortality was observed within first three months in both groups [accepted vs. refusal group 21.4 % vs 41.5 % respectively, ($p < 0.005$)]. Relative risk (RR) showed that mortality in patient who refused dialysis was 1.37 time higher than who accepted for dialysis ($p < 0.05$).

Conclusion: This study shows that patients who accepted dialysis survived longer as compared to patients who refused dialysis and patients refusing dialysis were having high mortality.

Corresponding Author | Prof. Dr. Muhammad Anees, Professor of Nephrology, KEMU/ Mayo Hospital, Lahore

Email: dranees109@hotmail.com

Keywords | hemodialysis, refusal of dialysis, survival, ESRD.

Introduction

Chronic kidney disease (CKD) is defined as “Abnormalities of kidney structure or function, present for more than three months, with implications for health uniform reference style. Treatment of CKD includes retarding CKD progression, timely management of its complications and preparing patients for renal replacement therapy (RRT). Peritoneal dialysis

(PD), hemodialysis (HD), renal transplant (RT) and conservative management are four treatment options available for RRT. In Pakistan ninety percent of the patients with CKD V opt for dialysis as facilities of renal transplant are not available at mass level. Amongst dialysis, 95% of the patients opt for HD as the Continuous Ambulatory Peritoneal Dialysis (CAPD) facilities are limited,² more expensive and are not sponsored by government. It has been obser-

ved that there are misconceptions about the dialysis in our population leading to refusal of dialysis. According to local literature, 67.3% of the CKD patients refuse for dialysis^{3,4} which is much higher than developing country like Singapore where it is only 39%.² The patients who refuse dialysis, they want to continue treatment by different modalities like herbal medicine, spiritual and homeopathic. Refusal of dialysis affects not only quality of life but also mortality.^{5,6} According to Poppe et al,⁵ acceptance of dialysis has significant positive prediction of physical and mental health related quality of life of HD patients. Similar observation regarding survival was noted by Dominique Joly et al,⁶ where median survival was 28.9 months (95% CI, 24 to 38) in patients undergoing dialysis as compared with 8.9 months (95% CI, 4 to 10) in patients treated with non-dialysis management ($P < 0.0001$). It has been observed that patients who refuse dialysis later on present in a critical condition with high morbidity and mortality.^{7,8} Our local experience suggests that family members of such deceased patients perceived that the procedure of dialysis as a reason for high morbidity and mortality, whereas reality is otherwise. Internationally, limited data is available and locally there is no data on the outcome of the patients refusing dialysis. This study was therefore designed to explore this important neglected aspect of the CKD patients. The objective of the study was to determine the effect of refusal of hemodialysis on survival in CKD patients.

Methods

This prospective was conducted from January 2015 to December 2016. All patients of CKD Stage V, presenting in Nephrology Out Patients Department with the indications of dialysis were included in the study. Patients with acute kidney injury and whose follow up was not completed for one year were excluded from the study. Patient's demographic and laboratory (hematological, biochemistry and viral markers) data were collected at the time of enrollment in the study. Patients were counseled in detail for initiation of hemodialysis and were divided in two groups; Group I: patients who accepted hemodialysis and Group II: who refused dialysis and wished to continue on conservative treatment. Group II patients were asked for a follow up visit at one week and were reconciled about initiation of hemodialysis. If they

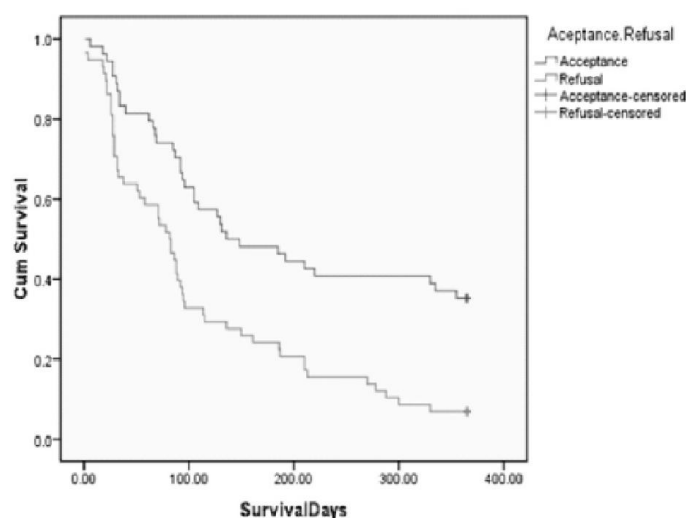
still were unwilling for dialysis then they were included in the Group II. Patients accepting for dialysis were offered dialysis after admission in the Nephrology Department. Patients who refused dialysis were put on conservative treatment in the form of fluid restriction, correction of anemia, mineral bone metabolism, sodium bicarbonate replacement, anti-hypertensive, anti-diabetics and diuretics. Both groups were followed for outcomes at one, three, and twelve months. Data was entered using SPSS version 21.0. Continuous variables like age, duration of dialysis were expressed as Mean \pm SD. Categorical variables were presented as frequencies. Relative Risk (RR) was used to determine effect of clinical and biochemical parameter on mortality. Kaplan-Meier method was used to analyze the survival pattern of the both groups. A p value of less than 0.05 was considered as statistically significant.

Results

Total numbers of patients enrolled in the study were 139, amongst them, 118 patients were included in study and 21 patients were excluded due to lost to follow. Majority of patients were male 68(57.6%) and most of the patients 67(56.8%) were in middle age (>45 years) group. Major cause of ESRD was Diabetes Mellitus 54(45.8%) followed by Hypertension 45(38.1%). Most of the patients 86(72.9%) belonged to poor socioeconomic status with income less than may be mentioned in rupees per month. Mean hemoglobin was 8.09 ± 1.86 gm/dl and majority of the patients 110(93.2%) were anemic on presentation for dialysis. Mean albumin was 3.1 ± 0.63 gm/dl and 107(90.7%) were malnourished with serum albumin of less than 4 gm/dl. Over all mean survival was 151 ± 129 days in all patients. Patients who opted for dialysis survived longer as compared to patients who refused dialysis (200 days versus 112 days), which was statistically significant ($p \leq 0.000$) as shown in Figure No.1. Highest mortality was observed within first three months in both groups [accepted vs. refusal group 21.4 % vs 41.5 % respectively, ($p < 0.005$)]. relative risk showed that the mortality in patients who refused dialysis was 1.37 times higher than who accepted for dialysis ($p < 0.05$). There was no statistically significant difference in the demographic, clinical and laboratory data of both groups at the time of enrollment in the study as shown in Table No.1.

Table 1: Demographic, Laboratory Data and Survival of Two Groups of the Patients

| Sr. No | Parameter | Acceptance (n=59) | Refusal (n=59) | P Value |
|--------|----------------------------------------|-------------------|----------------|---------|
| 1. | Age(Years) | 47.51± 14.87 | 49.76± 12.61 | 0.377 |
| 2. | Serum Urea(mg/dl) | 201 ±64 | 177± 45.2 | 0.025 |
| 3. | Serum Creatinine (mg/dl) | 10.78± 3.91 | 9.88± 3.74 | 0.205 |
| 4. | Serum Potassium(mmol/l) | 5.01 ±0.92 | 4.96 ± 1.04 | 0.809 |
| 5. | Hemoglobin(G/dl) | 8.38± 1.66 | 8.38± 1.66 | 0.364 |
| 6. | Serum Albumin(G/dl) | 3.13± 0.64 | 3.12± 0.63 | 0.943 |
| 7. | Serum Bicarbonate(mmol/l) | 14.73± 5.17 | 14.92 ±3.91 | 0.818 |
| 8. | Calcium Phosphate Product | 56.3± 17.7 | 61.07± 18.05 | 0.150 |
| 9. | Survival days | 200 ±141 | 112 ± 107 | 0.000* |
| 10. | Mortality within one month | 8(6.8%) | 21(17.8%) | 0.009* |
| 11. | Mortality after one to three months | 13(14.62%) | 21(23.69%) | 0.0003* |
| 12. | Mortality after three to twelve months | 19(34.54%) | 13(23.63%) | 0.043* |
| 13. | Overall Mortality | 40(33.89%) | 55(46.61%) | 0.000* |

Survival Functions**Figure No.1.** Survival Pattern of Patients those Accepted and Refused Dialysis

Discussion

In this study, as compared to international data, our patients suffering from ESRD were younger with mean age of 48.64±13.7years. Similar results are observed by our local data³ in which mean age was 42.59±13.72 versus 60.6±15.5 years worldwide.^{4,9,10} The important reasons for this discrepancy include casual attitude of patients towards their disease due to belief and myths, alternative medicine (homeopathic,

herbal and spiritual), poor socioeconomic status, lack of follow up and poor compliance for dietary restrictions. Such a poor pre dialysis care of frequent etiologies of CKD leads early progression to ESRD at very younger age. The proper pre dialysis care of CKD patients ultimately transfer into survival benefits on long term basis. In a study by Yu Y-J et al¹⁰ noted that multidisciplinary pre dialysis education and care in CKD patients, compared to usual care, tended to have lower overall total medical cost in the first 6 months after hemodialysis initiation (9147.6 ± 0.1 USD/patient vs 11190.6 ± 0.1 USD/patient, p = 0.003), fewer in numbers of complications [0 (1) vs. 1(2), p<0.001] and length of hospitalization [0 (15) vs. 8 (27) days, p<0.001], and also lower inpatient cost [0 (2617.4) vs. 1559.4 (5019.6) USD/patient, p<0.001]. These favorable results were due to reduced cardiovascular hospitalization and vascular access related surgeries. Worldwide limited data is available regarding the refusal of dialysis amongst CKD patients. Actually, health systems of the developed countries are very strong and they start counseling for renal replacement therapy at very early stage of CKD. So, when patients present for the need of dialysis, they are already well versed about dialysis leading to very high rate of acceptance of dialysis, whereas in Pakistan, due to lack of recognition of nephrology as specialty, there is lack of proper screening program for the early detection of CKD and patients are referred to nephrologist when they are just at the verge of dialysis. After that most of the patients refuse dialysis which is about 67.3% according to a study.⁴ There are many reasons of refusal of dialysis in our patients. According to our earlier study by Anees et al,⁴ fear of death in dialysis is one of the most significant reasons for refusal from dialysis. It has been observed that patients of End Stage Renal Disease (ESRD) have false myths about dialysis and they think dialysis is equivalent to DEATH sentence. Due to this, these patients refuse for dialysis and ends up with advanced complications of uremia in the form of malnutrition, metabolic acidosis, anemia and initiating dialysis with tempo-rary catheter leading to high mortality. This thing further conveys the message to other CKD patients and strengthens the misconceptions about dialysis. In Pakistan, Nephrology is struggling and there is paucity of trained nephrologist and departments even at the secondary and tertiary care hospitals. There are 250

qualified nephrologists for a population of 150 million¹¹ as compared to Italy, where there are 53 nephrologists per million populations.¹² According to a local study, even the knowledge of the non-renal physicians and surgeons, is not sufficient regarding the diagnosis and management of CKD patients⁽¹³⁾. Economical limitations are another important hurdle in the delivery of the dialysis services. Pakistan belongs to developing country and according to "Economic Indicators 2018" of Pakistan's, GDP per capita is \$1357.¹⁴ The cost of the dialysis is US\$ 400 per month give local figures, so the gap in income and dialysis expenses leads to another major reason for refusal of dialysis. Although government is providing free of the cost dialysis at public sector hospitals catering roughly 20-30% of the patients with average waiting time of six month to two years for getting appointment in these hospitals. Remaining majority of the patients, undergo dialysis at their own expenses or supported by some charitable organizations. Another factor in refusal of dialysis is non-availability of the nearby dialysis centers. According to a local study,¹⁵ six hours was average time required for one dialysis session including travel time of approximately 2 hours and have to travel more than 5 kilometers in 75.2 % at the patient's own expense. Majority of patients involve 1-2 family members for commuting and thus add on to the loss of work time. These hidden expenditures and social issues may also influence the final decision for accepting dialysis.

In this study, survival of the patient who refused dialysis is understandably much shorter than the patients who opted for dialysis. Similar observation is made by O' Connor et al,⁹ Reindl-Schwaighofer et al¹⁶ and Han et al.¹⁷ According to Jose Luis Teruel et al,¹⁸ 232 patient were included in the study, amongst them 39% patient opted for conservative treatment as compared to other modalities. He used different scales to assess co morbidity (Charlson index) functional deterioration was assessed using the Barthelindex 15 and gait abnormalities using the FACs scale. Mortality rate was 8.2/100 patient months in conservative therapy group versus 0.6/100 patient months in patients receiving renal replacement therapy ($p < 0.001$). In our study, we did not use any scale for assessing the co morbidities because our study patients were quite younger (48years) as compared to their study in which mean age was 68years.

In our study, we offered conservative treatment for patients who refused dialysis. Aim of conservative treatment is to slow the progression of CKD, treat symptoms on as required basis and planed of life care. Conservative treatment for CKD was in the form of replacement of iron and Erythropoietin (EPO), diuretics, sodium bicarbonate for metabolic acidosis, treatment of hyperkalemia, ketoamino acids, vitamin D3 and symptomatic management for pruritus, vomiting & fatigability. In general, in the developed world, the concept of conservative treatment is offered to the patients who are having advanced age¹⁸ and multiple co morbidities since dialysis is not going to change the overall life expectancy of these patients. According to UK Renal registry data, new starters on hemodialysis who were aged over 75 have a 30% mortality rate within the first year, and more than half will be dead within two years and five year survival is less than 20% worse than many canner patients.¹⁹ According to him, more than 75 years old dialysis patients have a one year mortality of 46.5% with patient spending an average of 20% time in dialysis units. In old age, dialysis modality does not improve survival and quality of life of the elderly patents.^{16,17} In our study, we however are troubled by the fact that large number of the patient opted for conservative treatment are at a very younger age. This is a big dilemma in our set up, since these young patients refusing dialysis could be a useful member and work force of the society. It is also disturbing that in this day and age of social media and information even available to the illiterate masses, we were unable to convince them. Such strong beliefs are influenced by misconceptions present in developing countries and distribution of information and health education needs probably rethinking and involvement of community at all levels. It is important to note, that the after effect of refusal and delay in dialysis acceptance will ultimately result in overall poor health status even on dialysis. This translates into younger population of hemodialysis patients who are unemployed due to their health status. The Limitations of the study were the long term followup is not performed and data from only two centers were collected.

Conclusion

Refusal of dialysis affects survival of dialysis patient and is a risk factor for mortality of CKD patients. There is need to create awareness about the dialysis

amongst patients of CKD at an early stages through counseling, electronic and print media.

Ethical Approval: Given

Conflict of Interest: The authors declare no conflict of interest

Funding Source: None

References

1. Kidney Disease: Improving Global Outcomes (KDIGO) CKD-MBD Update Work Group. KDIGO 2017 Clinical Practice Guideline Update for the Diagnosis, Evaluation, Prevention, and Treatment of Chronic Kidney Disease-Mineral and Bone Disorder (CKD-MBD). *Kidney Int Suppl.* 2017;7(3):1-59.
2. Teruel JL, Burguera Vion V, Gomis Couto A, Rivera Gorriñ M, Fernandez-Lucas M, Rodriguez Mendiola N, et al. Choosing conservative therapy in chronic kidney disease. *Nefrologia : publicacion oficial de la Sociedad Espanola Nefrologia.* 2015;35(3):273-279.
3. Shafi S, Saleem M, Anjum R, Abdullah W, Shafi T. Refusal of hemodialysis by hospitalized chronic kidney disease patients in Pakistan. 2018;29(2):401-408.
4. Muhammad A, Johar Ameen K, Abdul B, Muhammad I, Asim M. REFUSAL OF DIALYSIS AMONGST PATIENTS OF CHRONIC KIDNEY DISEASE (CKD). *Annals of King Edward Medical University.* 1970;20(3).
5. Ibrahim N, Teo SSL, Che Din N, Abdul Gafor AH, Ismail R. The Role of Personality and Social Support in Health-Related Quality of Life in Chronic Kidney Disease Patients. *PLoS One.* 2015;10(7):e0129015.
6. Verberne WR, Geers ABMT, Jellema WT, Vincent HH, van Delden JJM, Bos WJW. Comparative Survival among Older Adults with Advanced Kidney Disease Managed Conservatively Versus with Dialysis. 2016;11(4):633-640.
7. Peng Y, Yang X, Chen W, Yu X-Q. Association between timing of peritoneal dialysis initiation and mortality in end-stage renal disease. *Chronic diseases and translational medicine.* 2019;5(1):37-43.
8. Janmaat CJ, van Diepen M, Krediet RT, Hemmelder MH, Dekker FW. Effect of glomerular filtration rate at dialysis initiation on survival in patients with advanced chronic kidney disease: what is the effect of lead-time bias? *Clin Epidemiol.* 2017;9(4):217-230.
9. Brown MA, Collett GK, Josland EA, Foote C, Li Q, Brennan FP. CKD in Elderly Patients Managed without Dialysis: Survival, Symptoms, and Quality of Life. 2015;10(2):260-268.
10. Shi Y, Xiong J, Chen Y, Deng J, Peng H, Zhao J, et al. The effectiveness of multidisciplinary care models for patients with chronic kidney disease: a systematic review and meta-analysis. *International Urology and Nephrology.* 2018;50(2):301-312.
11. Jha V. Current status of end-stage renal disease care in India and Pakistan. *Kidney Int Suppl (2011).* 2013; 3(2): 157-160.
12. Sharif MU, Elsayed ME, Stack AG. The global nephrology workforce: emerging threats and potential solutions. *Clin Kidney J.* 2016;9(1):11-22.
13. Anees M, Ibrahim M, Adhmi SUZ, Nazir M. Comparison of awareness about nephrology and kidney diseases amongst doctors in institutes with and without nephrology departments. *Pak J Med Sci.* 2014;30(4):891-894.
14. Pakistan Economic Survey 2018-19. Economic Advisors Wing, Finance Division Government of Pakistan. Islamabad.
15. Joshi U, Subedi R, Poudel P, Ghimire PR, Panta S, Sigdel MR. Assessment of quality of life in patients undergoing hemodialysis using WHOQOL-BREF questionnaire: a multicenter study. *Int J Nephrol Renovasc Dis.* 2017;10(2):195-203.
16. Reindl-Schwaighofer R, Kainz A, Kammer M, Dumfarth A, Oberbauer R. Survival analysis of conservative vs. dialysis treatment of elderly patients with CKD stage 5. *PLoS One.* 2017;12(7):e0181345.
17. Han SS, Park JY, Kang S, Kim KH, Ryu DR, Kim H, et al. Dialysis Modality and Mortality in the Elderly: A Meta-Analysis. *CJASN.* 2015;10(6):983-993.
18. Teruel JL, Rexach L, Burguera V, Gomis A, Fernandez-Lucas M, Rivera M, et al. Home Palliative Care for Patients with Advanced Chronic Kidney Disease: Preliminary Results. *Healthcare (Basel).* 2015;3(4): 1064-1074.
19. Gilg J, Pruthi R, Fogarty D. UK Renal Registry 17th Annual Report: Chapter 1 UK Renal Replacement Therapy Incidence in 2013: National and Centre-specific Analyses. *Nephron.* 2015;129(1):1-29.