

Long Term Survival in Patients on Maintenance Haemodialysis

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SUMMARY

To analyze survival rates for 365 patients who received haemodialysis between December 1986 to March 1995 at the Department of Nephrology Sheikh Zayed Hospital, Lahore, a retrospective evaluation was carried out.

One hundred and five patients received kidney transplant and 51 had functioning graft at the end of the study period. The data of remaining 260 patients was compiled by Kaplan and Meier method. Cumulative survival rates of the dialysis patients were 82%, 55% and 42% at 1, 5 & 8 years respectively.

INTRODUCTION

Since its introduction in 1960, haemodialysis has gone through enormous changes to achieve better quality of life in dialysis patients¹.

Experience over the past 20 years reveals that survival in these patients has considerably improved and increasing number of patients have lived for more than a decade².

Recent advances in diagnostic techniques to detect renal disease at early stages, proper and timely arrangement for preparing patients for haemodialysis, modernization of dialysis equipment and modifications in the dialysis procedures has led to a promising future for this treatment modality³.

We report the cumulative survival rates and causes of death of patients with end stage renal disease (ESRD) on maintenance dialysis at a tertiary care centre, Sheikh Zayed Hospital, Lahore.

PATIENTS AND METHODS

Between December 1986 and March 1995, a total number of 365 patients received haemodialysis (HD) for ESRD. 105 (29%) received kidney transplant after a variable period of time and their data is compiled separately and compared with those who remained on haemodialysis (260 patients).

The medical records of these patients were scrutinized to establish the cause of renal failure,

time spent on dialysis, ultimate outcome and cause of death.

The principal inclusion criteria was patients with irreversible renal failure. Patients with acute renal failure, acute on chronic renal failure or those in whom renal function recovered after a variable period were excluded.

Haemodialysis patients were dialyzed 2-3 times a week for 4 hours with 1.2m² surface area cupraphane hollow fibre dialyzer. Acetate buffer dialyzate was used throughout. Kaplan and Meier Method was used to calculate the data⁴.

Null hypothesis in relation to string variables was confirmed by application of non parametric tests, T-test, Mann Whitney, whereas Mantel Hanzel Chi-square was used for comparison of variables with subgroups. SPSS program of SPSS corporation (USA) was used for application of these tests. For all these tests, a p value <0.05 was considered statistically significant.

RESULTS

Patients characteristic are shown in Table 1.

Out of 365 patients, 105 got kidney transplant. The remaining 260 patients (180 males and 80 females) were followed up for a mean observation period of 17 months (range 1-100). The mean age at the start of dialysis treatment was 45 years (12-70). Male to female ratio was approximately 2:1.

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Table 1: Patients characteristic

	<i>No. of patients</i>
Total	365
Transplanted	105
Maintenance dialysis (Study population)	260
Male	180
Female	80
Mean observation period (months)	17 (range 1-100)
Mean age (years)	45 (range 12-70)

Table 2: Age groups

<i>Age (Years)</i>	<i>No. of patients</i>
30	35
31-40	39
41-50	57
51-60	63
> 60	66

35 (13.5%) patients were under 30 years of age, 39 (15%) were between 31-40 years, 57 (22%) were 41-50 years, 63 (24.2%) were 51-60 years and 66 (25.5%) patients were above 60 years of age. The underlying causes of ESRD in all patients are shown in Table 3.

Table 3: Underlying renal diseases.

<i>Diagnosis</i>	<i>Number</i>	<i>Percent</i>
Diabetic nephropathy	71	28.0
Hypertension	97	37.3
Chronic glomerulonephritis	29	11.2
Chronic interstitial disease	6	2.3
Renal stone disease	2	0.07
Polycystic kidney disease	11	5.1
Undetermined	38	15

Cumulative survival in patients, above 60 years of age and under 60 years was 40% and 45%

respectively (P=NS). Similarly gender had non significant effect on survival. Cumulative survival in male patients was 40% and 46% females (P=NS).

Survival rates in different renal diseases at various intervals are shown in Table 4.

Table 4: Survival rates in various renal diseases.

<i>Diagnosis</i>	<i>1 year</i>	<i>5 years</i>	<i>8 years</i>	<i>P value</i>
DN	71%	45%	28%	p < 0.05
Hypertension	88%	60%	41%	p = NS
Chronic GN	89%	68%	48%	P = NS
CIN	90%	63%	50%	p = NS
All	82%	55%	42%	

DN, diabetic nephropathy; GN, glomerulonephritis nephritis; CIN, chronic interstitial drain.

It reveals that patient with diabetic nephropathy had inferior long term survival as compared to other renal diseases.

Table 5 summarized the causes of death in dialysis patients. Cardiovascular disease was the most frequent cause of death in these patients.

Table 5: Causes of death in dialysis patients (n = 138)

<i>Causes</i>	<i>Number</i>	<i>Percent</i>
CCF	59	42.8
IHD	15	10.9
Pericardial effusion	12	8.7
CVA	5	3.6
Sepsis	12	8.7
Miscellaneous	35	30.2

Comparison of survival between patients treated with maintenance dialysis and transplantation is shown in Fig. 1. It reveals that survival rate of dialysis patient were 82%, at 1 year 55% at 5 years and 42% at 8 years while those treated by transplantation were 85%, 63% and 48% at the same time intervals (P = NS).

Overall, by the end of 8 years, 138 (53%) patients had died, 13 (5%) were untraceable and 109 (42%) were alive.

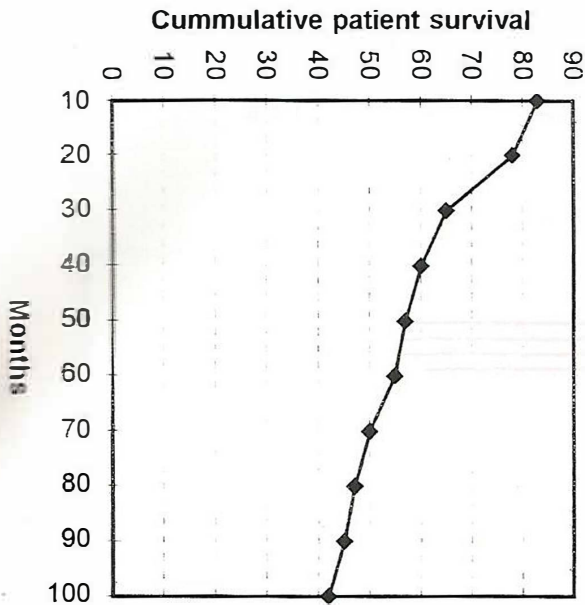


Fig. 1: Cumulative survival of patients on haemodialysis.

DISCUSSION

Three principal forms of renal replacement therapy, haemodialysis (HD) continuous ambulatory peritoneal dialysis (CAPD) and renal transplantation are available in Pakistan. Renal transplantation may be an ideal therapy for patients with end stage renal disease. Unfortunately, its practice is limited because of lack of facilities for cadaveric graft and non availability of live related kidneys⁵. CAPD is less successful mainly because of repeated infections⁶. Haemodialysis is considered by many, to be superior to CAPD and equally effective to renal transplantation in its ability to preserve life⁷. Overall survival rates of our dialysis population were 82% at one years, 55% at five years and 42% at eight years. These results are similar to those reported in other studies⁸. Bradley et al. in their study have reported the survival rates which were 68% at two years, 56% at five years and 47% at ten years⁹. Age and sex had no significant effect on survival. Patients with diabetic nephropathy had inferior long term survival as compared to other causes of renal failure. Presence of co-morbid condition like CCF, IHD, and hepatic failure were found to have an adverse effect on survival in the dialysis population¹⁰. Comparison of survival rates in patients treated by dialysis and transplantation is said to be difficult since patients tend to change between these two forms of therapy. Vollmer et al. using a mathematical method for

analysis found no significant difference in survival between treatment by transplantation and by dialysis in patients followed for 12 years¹¹. We also compared the survival rate between these two forms of therapy. The transplant patients survival rate was 85% at one years 63% at five years and 48% at eight years. These were not statistically significant from those of dialysis population. Cerebro-vascular events were the most common cause of both early and late mortality in the dialysis patients. The high cardio-vascular mortality in dialysis is well recognized¹². The exact reason is still a matter of debate. Some people consider that the process of dialysis itself could be a contributory factor^{13,14}. However, the coexistence of morbid conditions can not be ignored. The number of surviving patients is expected to rise because more dialysis centres are now using bio-compatible dialyzers and bicarbonate buffer dialyzate which are expected to reduce the incidence of life threatening complications. Also mortality in haemodialysis patients can be reduced by controlling cardio-vascular risk factors¹⁵.

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