Survival of Patients on Hemodialysis Therapy in Turkey: An Analysis of 20,087 Patients

Authors Kamil Serdengeçti (1), Gültekin Süleymanlar,(2) Mehmet R Altiparmak(1), Nurhan Seyahi(1), Kitty Jager,(3) Sinan Trabulus(2), Ekrem Erek(1)
Hospital 1-Istanbul University, Cerrahpasa Medical Faculty, 2-Akdeniz University Medical Faculty, 3-ERA-EDTA Registry, Department of Medical Informatics, Academic Medical Center,

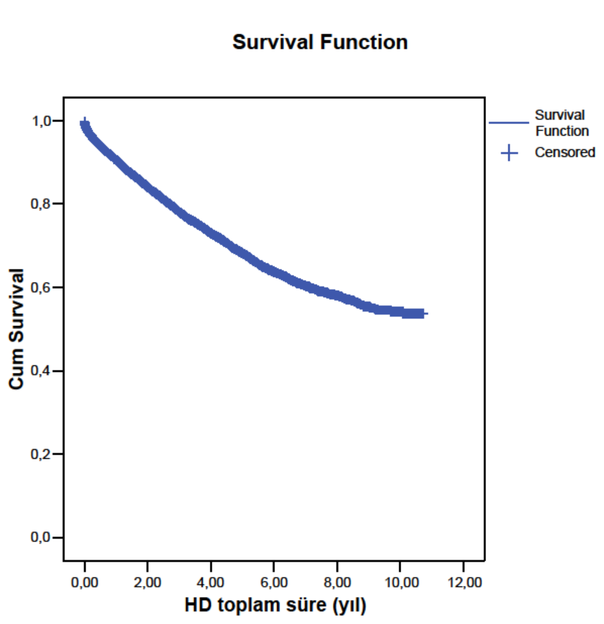
OBJECTIVES

Patients on HD are characterized by an exceptionally high mortality rate compared with the general population. Survival on HD is different in different parts of the world (1, 2). With a population of almost 72.5 million in 2009 and an annual growth rate of 1.45%, Turkey is one the most populous countries in Eastern Europe (3). As of 2009, there were 843 centers providing dialysis treatment for more than 50000 patients (4). The annual growth rate of dialysis patients has beenis roughly 12.5% per year (5). In this study we aimed to analyze the survival and factors affecting survival in hemodialysis patients in Turkey, using data from the Turkish renal registry

METHODS

Individual patient data have been collected annually since 1995, using a standard questionnaireincluding: identity information (name, surname, place of birth), date of birth, primary renal disease, comorbid diseases present at the start of RRT (diabetes mellitus, hypertension, cardiac disease, vascular disease, malignancy), name of center and date of RRT initiation, first treatment modality, changes in treatment modality (RRT type, date, and center name), number of renal transplantations, cause of graft loss, and date and cause of death. Paper forms were sent to RRT centers and collected back by postal mail. The data were then recorded in a central, computer-based database (dBase III for Windows®). At the end of 2005 the database contained 36654 unique patient records (Figure).
The patient survival was calculated by Kaplan-Meier survival analysis. The estimated risk ratio (hazard ratio: HR) and 95% confidence intervals (95% CI) were calculated by Cox regression analysis for determining the effects of the prognostic factors on survival. The analyses were performed using the SPSS 12.0 statistical program. Statistical significance level was set at $P < 0.05$

	Hemodialysis (n=20087)
Mean Age (years)	48.2 ± 17.6
Older age (≥65 years)	4251 (21.2%)
Sex (female)	8486 (42.4%)
Hypertension	10074 (50.2%)
Diabetes Mellitus	4141 (20.6%)
Coronary heart disease	1928 (9.6%)
Congestive heart failure	1375 (6.8%)
Periferal vascular disease	715 (3.6%)
Cerebrovascular disease	478 (2.4%)
Malignancy	435 (2.2 %)



RESULTS

Demographic and comorbid disease data of the patients included in the study are listed in Table . Mean age of the whole group was 48.2 ± 17.6 years.
The survival curve in hemodialysis, constructed according to Kaplan-Meier survival analysis, based on crude data of the patients is shown in Figure. This analysis included 20,087 hemodialysis careers showed that the survival at 1 year was 90.5%, at 5 years was 68.2%, and at 10 years was 54.2%
Results of the univariate Cox regression analyses examining the relationship between survival and study parameters shows that Older age, female sex, diabetes mellitus, coronary heart disease, congestive heart failure, peripheral vascular disease, cerebrovascular disease, and malignancy were associated with decreased survival. We also performed an age-adjusted analysis and then a multivariate analysis to calculate the independent effect of the different risk factors . According to multivariate analysis, hypertension was an additional determinant of decreased survival. However the association between peripheral vascular disease and decreased survival lost significance following multivariate analysis.

CONCLUSIONS

This is the first report on mortality in hemodialysis patients based on data from the Turkish renal registry. Our analysis of data from the 10-year period from 1995 to 2005 disclosed that the survival of hemodialysis patients was good and comparable to previous data reported in the literature from developed countries

REFERENCES:

1.Held PJ, Brunner F, Odaka M, et al. Five-year survival for end-stage renal disease patients in the United States, Europe, and Japan, 1982 to 1987. Am J Kidney Dis. 1990;15:451-457.
2.Goodkin DA, Bragg-Gresham JL, Koenig KG, et al. Association of comorbid conditions and mortality in hemodialysis patients in Europe, Japan, and the United States: the Dialysis Outcomes and Practice Patterns Study (DOPPS). J Am Soc Nephrol. 2003;14:3270-3277.
3.Turkish Statistical Institute. Available at http://www.tuik.gov.tr/PreTablo.do?tb_id=39&ust_id=11 (accessed October 10, 2010)
4.Registry of Nephrology, Dialysis and Transplantation in Turkey. Registry 2009 Istanbul: The Turkish Society of Nephrology; 2010
5.Suleymanlar G, Serdengecti K, Erek E, et al. Trends in renal replacement therapy for end stage renal disease in Turkey, 1996-2008 AJKD, 2011