Multidisciplinary Education of Patients with Chronic Kidney Disease

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Abstract

Background: Multidisciplinary education of patients with chronic kidney disease (CKD) is in focus of observational studies. Most of them demonstrated that education prolongs the time to dialysis and improves patient outcomes after the onset of dialysis.

Methods: During 2011-2012 at Policlinic Service all CKD patients who visited the outpatient nephrology clinics were enrolled. All patients were proposed multidisciplinary predialysis education (MPE).There are two groups: the MPE recipients (visited every month) and non-recipients MPE (visited irregularly). We compared the incidence of dialysis and mortality in two groups. The MPE was standardized in accordance with the NKF/ DOQI (National Kidney Foundation) / (Dialysis Outcomes Quality Initiative) guidelines.

Results: There are 120 patients. 60 received MPE and 60 non-received MPE. The mean follow-up period was 12 ± 1 months. Dialysis was initiated in 11,7 % in MPE group and 25 % in non-MPE group. Mortality was 1.7 % and 8.3% in the MPE and non-MPE groups, respectively.

Conclusions: An efficient standardized MPE program may decrease the incidence of dialysis and reduce the all-cause mortality in CKD patients.

Key words: chronic kidney disease, multidisciplinary education, dialysis, mortality

Introduction

Chronic kidney disease (CKD) is increasingly recognized as a global public health problem. The incidence of CKD is still increasing worldwide despite progress in integrity care and timely referral (Meguid El Nahas & Bello, 2005, Codreanu & al 2006, Hall & al 2006). The prevalence of CKD is nearly 10%. Studies from Europe, US, Australia and Asia confirm the high prevalence of CKD (de Zeeuw & al 2005, Chen & al 2005, Hallan & al 2006, Chadban & al 2003). Optimal and efficient treatment strategies to combat the high prevalence of end-stage renal disease (ESRD) are still in demand and we are waiting to implement these results in our practice. The 2006 KDIGO (Kidney Disease Improving Global Outcome) Controversies Conference on CKD was convened to consider six major topics: (1) CKD classification, (2) CKD screening and surveillance, (3) public policy for CKD, (4) CVD and CVD risk factors as risk factor for development and progression of CKD, (5) association of CKD with chronic infections, and (6) association of CKD with cancer.

KDIGO is working in collaboration with international and national public health organizations to facilitate implementations of these topics (National Kidney Foundation.(2002).

CKD can be detected using simple laboratory tests and treatment can prevent or delay complications of decreased kidney function, slow the progression of kidney disease and reduce the risk of cardiovascular disease (CVD) (Finkelstein & al 2008).Degree of renal insufficiency measured by estimated glomerular filtration rate (GFR) is commonly used in patients monitoring during CKD to assist in estimating prognosis of renal disease introducing prophylactic therapy and in deciding when to start renal replacement therapy (RRT).

On the other hand multidisciplinary predialysis education (MPE) based on the NKF (National Kidney Foundation) guidelines for patients with CKD may decrease the incidence of dialysis and reduce the all-cause mortality and the overall hospitalization rate. This valuable information confirms the role of MPE in the care of CKD patients (Devins & al 2003).

This is a clear message to the public, government health officials, physicians, allied health professionals, patients and families that CKD is common, harmful, and treatable and sometimes prevented (Levey & al 2007).

Chronic diseases are now the leading causes of death worldwide. In developed countries and lower middle-income developing nations CVD and cancer were the leading cause of death. In low-income developing countries, infection remained the leading cause of death, but chronic non-communicable diseases such as CKD were on the rise (World Health Organization, 2005, Yach & al 2004)

Diabetes, obesity, hypertension and CVD disease are increasing in frequency and is mirrored by an increase in the prevalence of CKD.

Outcomes of CKD include not only progression to kidney failure but also complications of reduced kidney function and increased risk of CVD. Patients with CKD are for more likely to die, principally from CVD, than to develop kidney failure (Keith & al 2004).CKD is also reported to be a risk factor for adverse outcome in other chronic disease such as infections and cancer, and should be studied in more detail (Fried & al 2005). Understanding the relationship between CKD and other chronic diseases is important to develop treatment strategies to improve outcomes. Identifying progressors, is a first step in a long road of discovery. The benefits of early referral to a nephrologist are well established (Wu & al 2005, Bradbury & al 2007). Outcomes studies evaluating the effects of nephrology care prior to dialysis, have reported varying improvements in the survival rates depending on the duration of the consultations with a nephrologist before dialysis (Jungers & al 2001, Roubicek & al 2000). A recent retrospective cohort study by Bradbury *et al* .demonstrated that patients who consulted a nephrologist at least one month prior to HD initiation had a lower risk of early mortality (Bradbury & al 2007).

In addition to outcome improvement in CKD patients, predialysis education influences the time elapsed before dialysis is considered imperative, improves the quality of life and increases the number of patients for whom self-care dialysis is planned (Jungers & al 2001, Roubicek & al

2000). Patients receiving predialysis education reportedly survive longer and have a lower hospitalization rate and lower incidence of immortality due to a cardiovascular event after the initiations of dialysis than those receiving conventional care (Goldstein & al 2004).

However regardless of the data obtained in these retrospective studies, the incidence of ESRD patients requiring dialysis and the mortality rate of CKD patients have not changed dramatically with time.

The impact of multidisciplinary predialysis education (MEP) on the status of renal function is controversial, and the awareness of dialysis among patients being treated by nephrologists remains low. Further, in these studies, the MEP programs had neither standard content nor a target audience. A simplified standardized guideline for MEP is mandatory for valid comparisons.

Subjects and methods

In accordance with the NKF/DOQI classification all CKD patients were predialysis stage III, IV, V, GFR (glomerular filtration rate) $< 60ml/min/1.73m^2$ determined using Simplified Modification of Diet in Renal Disease (MDRD) equation. Information was collected for statistical analysis, including demographic variables, causes of primary renal disease, initial status of renal function . Age 18-80 years. The patients were followed-up for 12 months for dialysis initiation or mortality from any cause. The MPE program was implemented at January 2011 at Policlinic Service. The team included: nephrologist, nurse, social worker. The program consisted of an integrated course involving individual lectures focused on nutrition, lifestyle, nephrotoxin avoidance, dietary principles and pharmacological regimens. Sessions were periodically every month. All patients evaluated by laboratory data and the clinical indications of chronic renal failure. Table 1 shows the demographics and clinical characteristics of patients at entry of study.

Table 1 Demographic and clinical parameters

	All patients (n=120)	Non-MPE (n=60)	MPE (n=60)	P-value
Age (years)	59.8±18.14	57.2±17.8	61.8±17.9	0.045
Male No. (%)	71 (59.1%)	39 (54.9%)	30 (43.5%)	
Female No. (%)	49 (40.9%)	25 (51%)	22 (44.9%)	
Primary disease				
Diabetes	48 (40%)	20 (33.3%)	28 (46.6%)	
Hypertension	15 (12.5%)	10 (16.6%)	5 (8.3%)	
CGN	12 (10%)	4 (6.6%)	8 (13.3%)	
Unknown	30 (25%)	18 (30%)	12 (20%)	
Others	15 (12.5%)	8 (13.3%)	7 (11.7%)	
GFR (ml/min/1.73m²)	23.8±20.1	23.4±20.6	24.2±19.6	0.634

Statistical analysis

Data were presented as the mean ± standard error for continuous variables and as proportions for categorical variables. The Student t-test was used to compare mean values among the groups. $P < 0.05$ was considered statistically significant.

Results

The study involved 120 CKD patients.71 (59, 1%) patients were males and 49 (40, 9 %) patients were females. The mean age 59.8 ± 8.14. MPE group was older 61.8 ± 17.9 versus 57.2 ± 17.8 in non –MPE group. The mean GFR was 23.8 ml/min (± 20.1)/1.73 m². The prevalence of hypertension was much lower in MPE group versus non-MPE group (8.3 % versus 16.6 %, (P< 0.001). The change of renal function by GFR was 0.08 ±0.139 ml/min/month in the MPE group and -0.113 ± 0.786 ml/min/month in the non- MPE during the 12 month of follow- up (P < 0.01). In Tab. 2 is shown the percentage of dialysis and mortality in MPE and non- MPE patients. Dialysis was initiated in 7 patients (11.7%) from 60 patients in MPE group and 15 patients (25%) in non-MPE group respectively (P<0.001). The average time required for dialysis therapy in the non-MPE and MPE group was 9.2 months and 11.3 months respectively. One patient (1.7%) of the MPE group and 5 patients (8.3%) of the non-MPE group died after a follow-up time of 12 months (P<0.001). The average survival time in the non-MPE and MPE groups was 11.2 and 11.9 months respectively.

Table 2 Dialysis and Mortality in MPE and non-MPE patients

	Non-MPE (n=60)	MPE (n=60)	P-value
Dialysis	15 (25%)	7 (11.7%)	<0.001
Mortality	5 (8.3%)	1 (1.7%)	<0.001

Discussion

Previous observational and retrospective studies have demonstrated that MPE prolongs the time to dialysis and improves patient outcomes after the onset of dialysis. The improvement experienced by MPE recipients could be the result of many factors such as improved nutrition habits due to increased dietary knowledge, adoption of a positive attitude towards physical fitness, improvements in patient compliance with medication regimens, adoption of a healthier lifestyle and greater awareness of the use of nephrotoxins.

In this study we demonstrated that the incidence of dialysis was lower and the time to dialysis therapy was significantly longer for MPE recipients. On the other hand the mortality was lower in MPE group.

The use of cardio- renal protective ACE (angiotensin -converting enzyme) inhibitors , ARB (angiotensin receptor blocker) is recomandated in most of patients. MPE can enhance the

acquisition of knowledge regarding illnesses and appropriate treatment measures encourage an active and collaborative role of the patients, reinforce systems for individualized psychological support, improving medications regimens and increasing the use of cardio- renoprotective drugs, and iron and sodium bicarbonate.

Several factors are considered to hamper the effects of self-care treatment modalities late referral for treatment limited availability of treatment options, lack of reimbursement, lack of support from medical staff, need for assistance and the duration of the training programme.

The elderly do have CKD to a greater proportion then do their younger counterparts. The natural history of the condition is different not the disease itself. The care of these patients therefore is likely not the same as that of younger age groups, but we are still far from understanding how to optimize the care of these patients .

In this modern information era, other roads of multidisciplinary educations are present. Many renoprotective preventive measures or materials are easily accessed by public communication or network media. However, this type of information contamination was non-differential .Patient compliance of the learned information was also a factor that could not be measured.

It is important to increase our precision and ability to predict outcomes in CKD so that appropriate resources, expectation and systems can be put in place that optimize individual patients outcomes and health care system functioning. As a result, physicians, investigators and public health officials across the world can now more easily ascertain CKD irrespective of cause, study its antecedents and outcomes determine risk factors for its development and progression and develop strategies for its prevention, detection, evaluation and treatment.

In conclusion, an efficient standardized MPE programme complying with the NKF/DOQI guidelines may decrease the need for dialysis and reduce the all-cause mortality un CKD patients. This information confirms the role of multidisciplinary education for patients with CKD.

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