SŁAWOMIR MOZUL[1], ALICJA ZAŁUSKA[2], PIOTR KSIĄŻEK[3], SŁAWOMIR RUDZKI[4], WOJCIECH ZAŁUSKA[1]

Czynność nerek i określenie stanu anemii na wczesnym etapie normalizacji funkcji nerek u pacjentów po przeszczepie nerki

Renal function and anemia status determination at the early stages of kidney transplant function

Streszczenie

Wstęp. W związku z systematycznym wzrostem liczby pacjentów z rozpoznaniem przewlekłej choroby nerek (PChN), wzrasta liczba potencjalnych kandydatów do leczenia nerkozastępczego. Ze wszystkich metod terapii nerkozastępczej przeszczep nerki wydaje się być najbardziej optymalny. Założeniem niniejszej pracy była obserwacja normalizacji funkcji nerek u pacjentów po przeszczepie nerki w okresie 26-tygodniowego cyklu po przeszczepie.

Metodyka. Do obserwacji zakwalifikowano 25 pacjentów, w tym 5 kobiet w przedziale wieku od 20 do 67 lat (średnia wieku 43,3 roku). Do oceny funkcji nerki przeszczepionej użyto estymacji matematycznych w oparciu o wzór wg Cockroft-Gault oraz wg Modification of Diet in Renal Disease (MDRD).

Wyniki. U pacjentów po allogenicznym przeszczepie nerki po 26-tygodniowym okresie obserwacji stwierdzono w 25-osobowej grupie pacjentów wielkość GFR wg wzoru Cockrofta-Gaulta, GFR=73,46 ml/min/1,73 m^2, oraz GFR = 61,91 ml/min/ (skalkulowany w oparciu o wzór wg MDRD). Wyniki te odpowiadają drugiej fazie rozwoju przewlekłej choroby nerek wg National Kidney Foundation.

Wnioski. Określana jako udana, operacja przeszczepu nerki nie koresponduje z całkowitą normalizacją funkcji nerek. Oszacowana wielkość GFR na podstawie wzoru wg Cockrofta-Gaulta była statystycznie wyższa w porównaniu do GFR, oszacowanego na podstawie wzoru MDRD.

Słowa kluczowe: transplantacja nerki, funkcja nerek, przewlekła niewydolność nerek.

Summary

Introduction. Along with the world tendency of increased number of patients with chronic kidney diseases, the number of individuals undergoing renal replacement therapy also augments. From all methods of such kind of therapy, renal transplantation is considered to be most optimal The aim of this study was to assess the renal function during a 26-week follow-up post-transplantation period.

Methods. Measurements were carried out on 25 patients with chronic end-stage renal failure qualified for allogenic renal transplantation, including 5 females and 20 males aged 20-67 (mean 43.3 years old). For determination of renal function glomerular filtration rate value has been determine using Cocroft-Gault and widely use Modification of Diet (MDRD) equation.

Results. Patients after allogenic renal transplantation after a 26-week follow-up period reached CKD stage 2 according to NKF with the mean value of glomerular filtration rate GFR = 61.91 ml/min/1.73 m^2 (according to MDRD) and 73.46 ml/min (according to Cockroft-Gault).

Conclusion. The successful kidney transplantation is not corresponding with normal renal function achievement. The estimated GFR obtained with the Cockcroft-Gault equation was consistently higher than that from the MDRD equation in patients with after renal transplantation.

Key words: kidney transplantation, renal function, chronic renal failure.

[1] Department of Nephrology Medical University of Lublin, Poland
[2] Department of Physical Therapy and Rehabilitation Medical University of Lublin, Poland
[3] Department of Public Health Medical University of Lublin, Poland
[4] Department of Surgery and Transplantation Medical University of Lublin, Poland

INTRODUCTION

Along with the world tendency of increased number of patients with chronic kidney diseases, the number of individuals undergoing renal replacement therapy also augments. From all methods of this therapy, renal transplantation is considered to be most optimal (with regard to life expectancy, risk of death, quality of life and therapy costs) [1, 2]. The choice of this method is connected with the necessity to maintain immunosuppressive therapy after the transplantation. It has been established that numerous well-known systemic side effects such as arterial hypertension, diabetes mellitus and dyslipidaemia not only increase the risk of cardiovascular morbidity but also constitute non-immunologic triggers of chronic allograft failure. Diagnosis and staging of chronic kidney disease (CKD) is important for management and prevention of renal disease progression. It is unclear whether K/DOQI guidelines of the National Kidney Foundation are applicable to diagnosis of CKD in renal transplant recipients (RTRs) and which method is most appropriate for estimating glomerular filtration.

The aim of this study was to assess the renal function during a 26-week follow-up post-transplantation period.

MATERIAL AND METHODS

Measurements were carried out on 25 patients with chronic end-stage renal failure qualified for allogenic renal transplantation, including 5 females and 20 males aged 20-67 (mean 43.3 years old). Each patient underwent 6 measurements of body compartment volume with use of electrical bioimpedance. The first measurement was carried out prior to the transplantation, further 2 measurements were performed during post-transplantation hospitalization – 1 week (measurement 2) and 2 weeks (measurement 3) after the operation. Measurements 4, 5 and 6 were carried out during out-patient follow-up appointments 4 weeks (measurement four), 13 weeks (measurement five) and 26 weeks (measurement six) after the renal transplantation, respectively.

STATISTICAL ANALYSIS

Data are presented as mean ± standard deviation (SD). Differences between groups were estimated by means of Pearson's product-moment correlations and a probability (P) <0.05 was assumed to reject the null hypothesis. Statistical analysis was performed using SPSS\PC for Windows, version 10.0.

RESULTS

Patients after allogenic renal transplantation after a 26-week follow-up period reached CKD stage 2 according to NKF with the mean value of glomerular filtration rate GFR = 61.91 ml/min/1.73m^2 (according to MDRD) and 73.46 ml/min (according to Cockroft-Gault) (Figure 1). The mean Cockcroft-Gault GFR was significantly higher than the Modification of Diet in Renal Disease (MDRD) GFR in investigated 25 patients (p<0.0001).

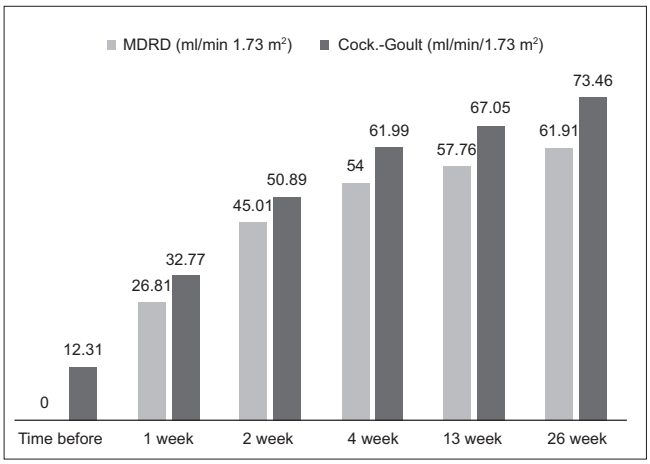

FIGURE 1. Glomerular filtration rate (GFR; ml/min/ 1.73 m^2 body weight) as estimated using Cocroft-Goult and MDRD formula.

DISCUSSION

Advances in dialysis treatment have contributed to improved survival of patients with end-stage renal disease (ESRD). However, despite improvements in the treatment of ESRD, the level of health-related quality of life is much lower for these patients than for the general population [3, 4]. Numerous prediction equations have been developed to estimate renal function [5]. Most of the predictive equations have been tested or validated in the kidney transplant populations that were deemed to be in a steady state. In a nutshell, the Modification of Diet in Renal Disease equations yielded the least bias in most studies comparing predicted GFR measurement with isotopic GFR [6] determinations. Arterial hypertension, dyslipidaemia, obesity and diabetes mellitus are common steroid-associated side effects and known to increase the risk of cardiovascular complications and in consequence deterioration of renal function [7, 8]. While some studies have shown no correlation between graft dysfunction and congestive heart failure or ischaemic heart disease, registry data suggest that increased post-transplant serum creatinine levels are strongly associated with cardiovascular risk. The high prevalence of cardiovascular disease leads to a substantial increase in cardiovascular mortality in transplant recipients, particularly in those 65years of age [9]. Routine screening of cardiovascular disease in renal transplant recipients is controversial among cardiologists.

In the present study our investigated patients population after allogenic renal transplantation after a 26-week follow-up period reached CKD stage 2 according to NKF. It has been postulated that renal transplant recipients should be routinely screened for cardiovascular disease pre-transplantation, and immunosuppressive therapy should be tailored to minimize further risk [10, 11].

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Informacje o Autorach
Dr n. med. Sławomir Mozul – adiunkt, Katedra i Kliniki Nefrologii, Uniwersytet Medyczny w Lublinie; dr n. med. Alicja Załuska – asystent, Zakład Rehabilitacji i Fizjoterapii, Uniwersytet Medyczny w Lublinie; dr hab. n. med. Piotr Książek, prof. nadzw. UM – kierownik, Zakład Zarządzenia i Ekonomiki Ochrony Zdrowia, Uniwersytet Medyczny w Lublinie; prof. dr hab. n. med. Sławomir Rudzki – kierownik, Katedra i Klinika Chirurgii Ogólnej i Transplantacyjnej, Uniwersytet Medyczny w Lublinie; prof. dr hab. n. med. Wojciech Załuska – Katedra i Klinika Nefrologii, Uniwersytet Medyczny w Lublinie; ordynator, Oddział Nefrologii i Stacji Dializ, Wojewódzki Szpital Specjalistyczny im. Kard. St. Wyszyńskiego w Lublinie.

Adres do korespondencji
Prof. dr hab. n. med. Wojciech Załuska
Katedra i Klinika Nefrologii Uniwersytetu Medycznego w Lublinie
20-090 Lublin, ul. Jaczewskiego 8, Poland
tel/fax.: (81)7425334