

Research Article

Behavior of Creatinine in Renal Donors

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Abstract

Introduction: Chronic Renal Disease (CKD) is a health problem in the world and demands a large amount of economic and technological resources to health systems. It is universally accepted that the best treatment for CKD is Renal Transplantation (TR). In Mexico, TR is essentially a related live donor, which introduces into the health system an additional commitment for the adequate selection of donors and post-donation surveillance. The aim of this study is to analyze the behavior of renal function in renal donors.

Materials and Methods: We performed a retrospective analysis of renal donors in the National Medical Center (CMN) Siglo XXI Transplant Unit from 2014 to 2015, where the behavior of related kidney donors was analyzed; in total, data were collected from 107 donors, measuring creatinine (Cr) in mg / dl, prior to transplantation, 24 hours after nephrectomy and 3 months after surgery. We performed an analysis of median, quartile, and Friedman test to show the differences among the 3 measurements; Kruskal-Wallis to show the differences in terms of gender. The statistical program SPSS 21 was used.

Results: Of the 107 files of the donors reviewed, 60 corresponded to women, 47 men. Before donation the median Cr was 0.77 (Q25-75 0.67-0.88); 24 hrs of nephrectomy 1.2 (1.01-1.40) and at 3 months 1.03 (0.89-1.23).

Discussion and Conclusion: After 24 hours of donation creatinine increased by 55.8%, which decreased at 3 months, but it remained elevated compared to baseline before nephrectomy (a 33.7% increase). This is fundamental to strengthen cadaveric donation programs and to form a culture to favor it. We urge with this study the altruistic donation of deceased donor.

Keywords: Creatinine; Renal transplantation; Renal donor

Introduction

Chronic Renal Disease (CKD) is a health problem in the world and demands a large amount of economic and technological resources to health systems. CKD is a disease that evolves according to multiple factors, mainly uncontrolled chronic diseases such as Diabetes Mellitus (DM), Systemic Arterial Hypertension (SAH) and Obesity; there are also other factors such as smoking, alcoholism and dyslipidemia, associated with up to 70% of cases of CKD [1,2]. The CKD is staged according to the KDOQI classification with updating in 2012 where it is not only considered a glomerular filtration rate of less than 60 ml / min in a Creatinine clearance (Cr) for 3 months, but also very particular situations of potential renal damage which are able to progress despite a normal Glomerular Filtration rate (GFT), these conditions are: (a) Albuminuria, (b) Abnormalities in urinary sediment, (c) tubular disorders and abnormalities in electrolytes, (d) renal alterations detected by histology, e) structural abnormalities detected by image and f) history of renal transplantation [1-3].

It is universally accepted that the best treatment for CKD is Renal Transplantation (TR). In Mexico, TR is essentially performed with living related donor; According to statistics have been made in our country through the history 43,322 kidney transplants, from the first performed in the year 1963 to 2015. Of which 9,941 (22.9%) have been from deceased donor. The living donor faces multiple post-donation changes, the main one of which is the compensation of the

functioning nephron mass that can reach to recover an average of 70-80% of the original kidney function after donation⁶. Being in most asymptomatic cases and, donating a kidney does not increase the risk of developing chronic kidney disease in the future. However kidney disease is a silent disease, so that in donors is extremely important monitoring constantly of kidney function; related and unrelated living donor transplantation introduces into the health system an additional commitment for adequate donor selection and post donation surveillance [4-8].

In meta-analysis performed, where they show the behavior of renal function, they only specify that there is a decrease in the glomerular filtration rate over time; Including a separation in less than 6 months, between 6 months and 5 years and more of this time, in addition to an increase in creatinine values, without specifying specific values, either in milligrams / deciliter or percentage of baseline, As well as not showing a statistical significance regarding the values of protein excretion [9]. There are even studies that support that renal function and the compensation of hyper filtration and renal recovery is still uncertain [10]. The vast majority of studies support surveillance at Long pass; without paying attention to the acute changes that are involved in renal recovery, without establishing baseline creatinine levels prior to donation or behavior in the first hours of nephrectomy [11]. Conditions that we will analyze in this work.

The objective of this work is to analyze the behavior of renal

Table 1: Behavior of creatinine in 107 renal donors.

	Cr Pre-Transplant [±]	Cr 24 hr Nephrectomy [±]	Cr 3 months Post-surgery [±]
Medicine	0.78	1.2	1.03
m-M [†]	0.49-1.43	0.74-2.25	0.65-2.04
Q-25-75 [†]	0.67-0.88	1.01-1.4	0.89-1.23
Interquartile range	0.21	0.39	0.34

min MAX; [†] Quarters 25-75; [±] Comparative test of Friedman's 3 groups with a p <0.001

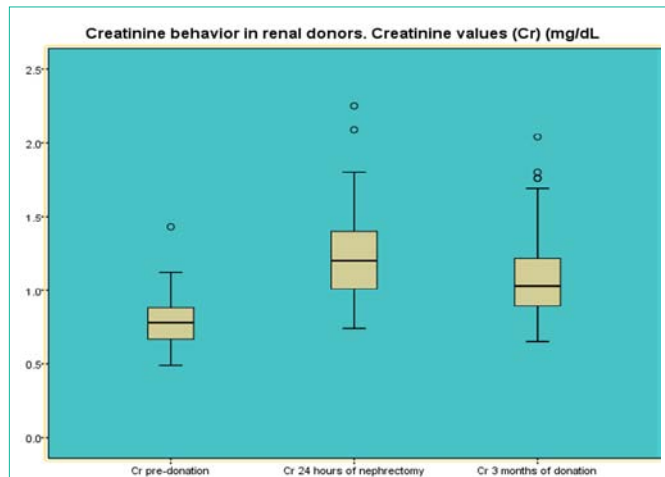


Figure 1: Behavior of creatinine in renal donors.

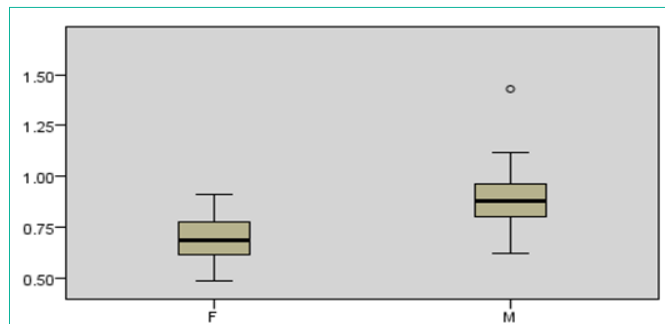


Figure 2: Creatinine levels by gender, prior to nephrectomy.

function in renal donors and to promote the transplant of deceased donor; creating an altruistic culture on the issue of chronic diseases such as terminal chronic kidney disease

Materials and Methods

We performed a retrospective analysis of renal donors in the Transplant Unit of the National Medical Center (CMN) Siglo XXI in the period from January 1, 2014 to December 31, 2015, where it was analyzed the behavior of related kidney donors; In total, data from 107 donors, with Creatinine (Cr) measurement in mg / dl, prior to transplantation, 24 hours after nephrectomy and 3 months after the surgical event were collected. Median analysis was performed as a measure of central tendency; Quartiles as a measure of dispersion, Friedman test was performed to show the differences among the 3 measurements and Kruskal-Wallis to show the differences in gender at the 3 moments of the creatinine measurement. The statistical program SPSS version 21 was used.

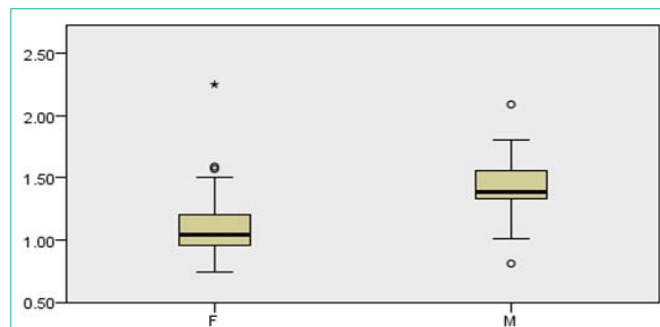


Figure 3: Creatinine levels by gender, 24 hours after surgery.

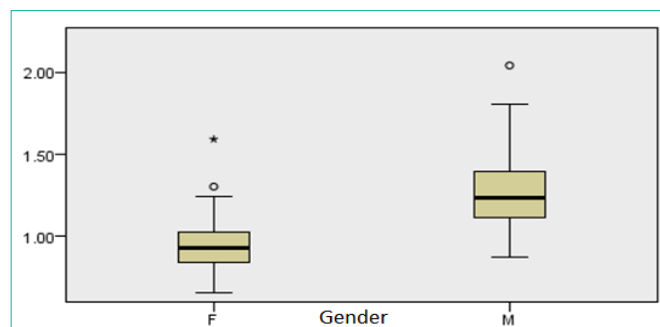


Figure 4: Creatinine levels by gender, 3 months after the surgical event.

Results

Of the 107 files of the donors reviewed, 60 corresponded to women (56.07%), 47 men (43.93%). Of this number of donors, 53 right (49.54%) and 54 left (50.46%) nephrectomies were performed. Before donation the median Cr was 0.77; 24 hrs from nephrectomy 1.2 and 3 months from nephrectomy 1.03 (Table 1).

A comparison was made between the 3 groups with Friedman's test for groups related to a p <0.001; A U-Mann-Whitney of p <0.001 was obtained in all combinations in pairs, all being different (Figure 1).

Gender analysis was performed and Kruskal-Wallis test was performed to show differences with a p <0.001; in the same way a U-Mann-Whitney of p <0.001 was obtained in all combinations in pairs, being different in all for genus (Figures 2-4).

Discussion and Conclusion

After 24 hours of donation creatinine increased by 55.8%, which decreased at 3 months, but remained elevated compared to baseline before nephrectomy (a 33.7% increase). This being fundamental to strengthen cadaver donation programs and to form a culture to favor it; We consider that it is imperative that our population wake up, I turned their eyes to this great health problem and contribute fomenting the cadaveric donation as in pioneering countries and leaders, as in the case of Spain. We urge with this study the altruistic donation of deceased donor.

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