

Living-donor kidney transplant in Colombia

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Summary

The best alternative for the treatment of patients with CKD-5 is renal transplantation; unfortunately, it has declined significantly, not only in Colombia but worldwide. Among the proposed medical and surgical approaches to extend this treatment, marginal donors were used at the beginning, but soon they were not enough due to the huge increase in the number of people in the waiting lists, many of them dying waiting for an organ. Given the excellent results of living donors, with graft survival approaching 90% at 10 years of follow up, explained by an increase in HLA compatibility, ease of planning the optimal moment for the transplantation, lower delayed graft function and costs, in addition to a minimum peri-operative risk for the donor as evidenced by *Hartman et al*, with a mortality rate of 3.1 x 10,000, when laparoscopic and pain control techniques are used, renal transplantation with living donors becomes an acceptable alternative worldwide.

Clear policies for patient and donor follow-up after nephrectomy, in which the donor loses 35% of his kidney function, are mandatory these protocols. Initial follow-up studies of living donors showed a similar relative risk of hypertension, proteinuria and CKD compared to the general population, which facilitated this medical practice; nevertheless, in the last five years the convenience of this practice is in doubt by some authors due to a significant increase in the relative risk of diabetes mellitus, hypertension and cardiovascular disease, compared with healthy donors. This has been shown by *Muzale et al.*, in a cohort of 96 217 living donors compared to 20 024 persons of NHANES III: an increase of CKD in living donors compared with healthy patients at 10 and 15 years; the relative risk at 15 years was 30.8 and 3.9 x 10,000, respectively. Regarding female donors in reproductive age, *Amit. X.* puts into question this type of donor as he found a significant increase in hypertension and preeclampsia during pregnancy in these women (11%) when compared to healthy women (5%).

That is why we ask the health providers and transplant groups a comprehensive assessment, with fully defined protocols to evaluate, prevent and reduce the risks of this excellent treatment modality for patients with stage 5 CKD.

Key words: Living Donor Kidney, Preemptive, Health Promoter, Health Provider Institution, PRA, Single Antigen, MDRD, CKD-EPI.

Trasplante renal con donante vivo en Colombia

Resumen

La mejor alternativa para el tratamiento del paciente con enfermedad renal crónica (ERC), en G 5, es el trasplante renal, el cual ha disminuido en forma significativa; no solamente en Colombia sino a escala mundial.

De las alternativas médico-quirúrgicas, propuestas para ampliar esta oportunidad de tratamiento fueron, inicialmente, los llamados donantes marginales, los cuales rápidamente fueron superados por la incidencia desbordada de esta entidad, con un incremento en la lista de espera y número de muertes de receptores en espera de un órgano. Teniendo en cuenta los excelentes resultados del donante vivo (DV), con sobrevida del injerto cercana al 90%, a los 10 años de seguimiento, secundaria a una mayor compatibilidad de los antígenos de los linfocitos humanos (HLA), facilidad de planear el momento óptimo del trasplante renal (TX), menor función retardada del injerto (DGF), con menos costos etc. Sumado a un riesgo peri operatorio mínimo para el donante como lo demuestra *Hartman et al.*, con una mortalidad del 3.1×10.000 , cuando se utilizan técnicas de laparoscopia y de control del dolor; hacen del TX con DV una alternativa aceptable en todo el mundo.

Contar con políticas y protocolos definidos de donación y de seguimiento, posteriores a la nefrectomía, en la cual el donante pierde el 35% de su función renal, son perentorios. Los estudios iniciales de seguimiento mostraron un riesgo relativo de hipertensión arterial (HTA), proteinuria y ERC, similar a la población general; lo cual facilitó esta práctica médica; pero en los últimos 5 años, se vienen presentando algunos cuestionamientos sobre este riesgo relativo (RR) por un incremento significativo de diabetes mellitus (DM), HTA, enfermedad cardiovascular en el donante al compararlo con población sana.

Muzaleet al., en una cohorte comparativa de 96.217 DV, vs. 20.024 pacientes del NHANES III, encontró a los 10 y 15 años una tasa mayor de ERC en DV al compararlos con pacientes sanos; el RRE (significado de la sigla) a los 15 años fue de 30.8 y 3.9×10.000 , respectivamente. Con respecto a donantes femeninas en edad reproductiva, *Amit X et al.*, pone en tela de juicio esta modalidad de donante al encontrar un incremento significativo de HTA y pre eclampsia durante el embarazo de estas mujeres 11% vs. 5% al compararlas con mujeres no donantes.

Es por ello que pedimos a las prestadoras de salud y grupos de trasplantes, una evaluación exhaustiva, con protocolos plenamente definidos para evaluar, prevenir y disminuir los riesgos de esta excelente modalidad de tratamiento para los pacientes en estadio grado 5 de la ERC.

Objetivo: el objetivo de este artículo es hacer una reflexión amplia y sistemática de los posibles riesgos vs. beneficios ya demostrados de esta modalidad de tratamiento en nuestro medio.

Palabras clave: DV, Preemptive, EPS, IPS, ARP, AFP, CCF, HLA, PRA, single antigen, MDRD, CKD-EPI

It is highly important to have a guide with all the data related to a living donor (LD) for management of CKD patient status 4. Living donor transplant is important in order to increase the number of transplants, especially in those regions where a cadaveric donor is difficult to obtain. Immediate solutions include a decrease in the waiting list and the opportunity for this therapeutic modality in CKD patients. On the other hand, renal transplant with DV (TxDV) allows for a “preemptive” form, and thus reduces costs by not entering patients into kidney dialysis therapy (1). In addition, we can schedule surgery and the recipient patient will be in optimal condition with a shorter time of cold ischemia, a decrease in the possibility of (DGF), early graft dysfunction and a need for immediate post-transplant dialysis (2.); In addition we can have a greater HLA compatibility, greater actuarial survival of the graft and of the recipient.

A Transplant unit (IPS Tx) must conduct donor and recipient promotion, assessment and follow-up; also, this IPS must have conducted transplants according to, medical and diagnostic services in accordance with national laws related to transplants previously established. The IPS Tx must have among others: surgeons, nephrologists, nurses, psychologists, social worker, nutritionists, anesthesiologists, etc. with certified transplant experience.

It is important that the donor and recipient be as a single medical – surgical entity which must be assumed since its initial stage and Follow-up (4) by the healthcare provider (EPS, ARP, AFP, CCF),

The donor must be in full use of his mental faculties and should freely express the desire to be a donor, before a medical and a legal entity established by Colombian laws, following conditions such as: be of legal age (> 18 and less than 55 years), be related

biologically (parents, brothers and sisters, uncles) or have an emotional relationship such as husbands, boyfriends, friends and if the law allows accept the donation of a Good Samaritan (4).

Each IPSTx must have a medical expert and paramedical group in renal tx, which will assess both the receiver and donor considering them as suitable patients for transplant process. The feasibility of the potential donor, determining their psychosocial, immune and surgical risk will be assessed individually and periodically. Initially, the nephrologist proceeds to perform the clinical history according to a protocol previously approved by the IPSTx, based on the OPTN guides (5). These protocols make a psychosocial and infectious risk diagnosis to the donor, discarding any risk of spoils due to the donor's donation classifying its infectious risk according to their natural habitat

Finally, a physical examination with emphasis on renal pathology or related illness is performed; their blood group is determined according to the ABO system, RH, it is not necessary when it is not evident in the kidney.

Related to HLA are toxic human antibodies, PRA, and single antigens. The registration protocol provides data about sex, size, weight, BMI, marital status, religious beliefs, TA and a minimum number of blood tests: full blood count test IV, platelets, TP, TPT, glycemia, cholesterol, triglycerides, HDL, LDL, creatinine clearance measured or calculated by (MDRD or CKD-EPI), proteinuria in 24h or relationship albumin/creatinine, urinalysis/sediment, electrolytes, uric acid, arterial blood gases, transaminases, Bilirrubinas, alkaline phosphatase albumin/immune-globulin; infectious profile for transmittable diseases such as: the antigen for HBV (HBAg), HCV,

HIV-1,2, HTLV-1,2, VDRL, PDP, CMV IgG-IgM, Toxoplasma IgG - IgM, Chagas, PEI disease, etc. as diagnostic aids, it must be measured by an EKG, an echocardiogram TT and perform chest x-rays and abdominal echo emphasizing on kidneys and urinary tract (5,6). Giving as result, a DV clinical evaluation, it is possible to have an approximation of the surgical irrigation according to the American Anesthetic

Association; and classify it as Minimal risk when it is given only by surgical procedure; Medium risk is considered when a patient presents other comorbidities such as hypertension, smoking, being overweight, in this way, specific assessment tests are needed when addressing medium risk. They include: cardiovascular or lung function tests. Lastly, High risk is considered when a patient has an established coronary artery disease, a cardiovascular pathology or a lung pathology. In this case it is important to perform a coronary-graph, pulmonary determinant tests, arterial Doppler, and the concept of other medical specialties that deal specifically with these pathologies. (6)

One week prior to tx arenal angiography on the urinary tract to assess possible anatomical variants and determine the nephrectomy was performed. This assessment must be done by an expert group which guarantees lower surgical morbidity and fewer cosmetic alterations, with a viability component of 100%, using modern techniques of laparoscopy and analgesia facilitating the post operative period (5).

It is important to take into account that donors older than 45 years of age should have a screening for occult neoplasia type, receive an amammogram, pap smear, colonoscopy, PSA, digital rectal examination or other dx needed related to patients' health risks (7,8). Based on scientific and legal point of views, regions must have a local coordination, which is part of a national network with an epicenter in charge of coordinating all aspects related to organ transplants, in this way it can be possible to obtain not only national data of this medical practice, but also become in an administrative and medical audit of reference entity (4).

It is important to clarify that there are some special cases of donation, which deserve special mention:

3- donors > 7 years with DM and hypertensive history, in advanced age or alteration in the renal medical image.

To conduct a comprehensive assessment of renal function in addition to previous examinations; to determine RFG by nuclear medicine, possible biopsy (Bx) renal % of glomeruli sclerosis, interstitial fibrosis, or vascular compromise; to determine

whether the component is feasible; donors with albuminuria > 300 mgrs /24h or debugging < 60 ml/min/1.73 m², if it is suggested not to accept(5) it is important.

4- Patient with family hereditary kidney disease history S. Alport type or illness of thin membranes, with presence of proteinuria/albuminuria or persistent hematuria should be discarded as donors. In our group of transplants (nephron, U of A and HSVP), we accept donors 25 years of age in which this entity has performed 97%, with prior evaluation conducted by an ophthalmologist and audiologist to discard commitment in other bodies such as lenticulus or deafness neuro-sensory, proper of this entity or variants; the genetic study is not justified and does not provide too much information, perhaps because of the doubt a bx renal histo-chemical evaluation would help the dx end (9,10).

Given the polymorphism in the PKD1 or PKD2 alleles, donors with ADPKD family history are not useful for giving a diagnosis. In our group we have used donors > 30 years, with logical image studies with a number of kidney cysts accepted according to the age, being an important factor in what is based on the initial diagnosis of this entity (11,12). Given the unpredictability of the evolution of the IgA nephropathy, our team does not accept these donors (13,14).

There is virtually no contraindication as donors among those patients with neoplastic disease in solid organs or skin in status 0, except with those ones who have Dx of melanoma because of the transmission risk (2 cases in our series); this concept is also accepted in the donors with brain neoplasm which are considered, ill-donors for the irrigation of transmission (7,8).

4- and recipient must know the possibility of relapse in % of the pathology of the recipient post-transplant for example MPGN type II-III, 80%, Glomerulus Focal sclerosis and segmental 30%, etc. (13,14). As well as the need for transplant combined: Kidney - liver, heart - kidney, pancreas - kidney, according to the pathology of the receiver, the best alternative is the deceased donor (DD).

But the cornerstone related to DV patient, would be able to determine, quantify, and control in an immediate

level and in time which entails a nephrectomy in a healthy patient and their possible consequences psycho - social, life expectancy and associated comorbidities (15,16). As we talked about initially, the nephrectomy and kidney tx, should be considered by the health providers companies, as a single medical entity r - Qco, not only in the perioperative immediately but also in its follow-up at the time; to do this, the IPStx, must have a monitoring protocol for assessing and controlling medicine in a patient where his renal function decreases abruptly(35%), post donation procedure(16).

One month after, our transplant team after surgery, conducted an RRF assessment, measured or calculated (MDRD or CKD-EPI), and asked for a chemical preservative that permits analysis of urine sediment, albuminuria in 24hrs or relation of albumin/Cr, glycemia, TA, weight, BMI, glycemia; but we consider these tests are minimum as follow-up process, every 3 months for the first year and then every 6 months, which is similar to the one used with a controlled single kidney patient; avoiding the hyper-filtration and their consequences; in addition, it is important to the ongoing counselling of social work, psychology and nutrition, to avoid as much as possible the use of contrast agents, NSAIDs, drugs nephron-toxics with timely medical advice.(17)

there are several workreviews based on medical literature that make possible to demonstrate the benefit of this type of transplant and the minimal complication of HTA, ERC, DM, survival with RR similar to the general population (1,17); this TX modality in different forums are promoted by internationally well-known teams. Oppenheimer of clinical hospital -In Barcelona, in its series on DV transplants between 2002 - 2011, presents graft survival to 10 years: related by HLA 100 %, 93 % and genetically unrelated 89.5 % (18). The experience in our group is of 4578 Transplanted patients 888 are DV (2000 - 2013) in this series, we found that the 62.4 per cent of the donors are brothers, followed by parents 23.9% and only 2 % are not genetically related; the male sex represents 51.2% with an average age of 35.1± 18 -60 years,

It represents 51.2% of 35.1± 18 -60 years average age, of the grafts to 60 months not censored was

87% (19). We can continue listing the experiences of many teams with regard to this procedure modality, but our final point is to determine the irrigation submitted to DV: in the perioperative (atelectasis/pneumothorax, pneumonia, ITU, wound complications QCA, TVP/TEP), all this depends in large part the surgical modality employed in the nephrectomy, the traditional, or laparoscopic and on the experience of the center (5.20); mortality in < 90 days is minimal 3.1/10.000, as it is proved the series of 80.347 donors, followed during 6 years (20);but at the end it has been arguing in a growing trend that this medical practice is not free. Among other problems, there is a slight RR, develop DM or cardiovascular disease by comparing the Donor with the general population; that the degree of physical adaptation and social development depends on a high degree of stratum prior to the donation (21,22,23).

In regard to the late comorbidities, information was discovered when reviewing the series presented by

Muzaale (24). a cohort of 96,217 DV, 20,024 patients matched with the NHANES III in the USA. The ERC was presented in 99 DV to 7.6 years of follow-up vs in 36 healthy patients in 10.7 years, the RRE at age 15 was 30.8 x 10000 in the DV and only 3.9 x10000 in the series of the NHANES III. Recently Amit X (25) questioned the donation of young women in reproductive age and demonstrated a significant increase of induced hypertension.

Pregnancy and preeclampsia in the DV: 15(131), 11% compared with 38(788), 5% healthy women with an OR of 2.4 %.

We fully agree that for the unsatisfied demand related to the best treatment for ERC patients status 5, the solution is the living donor (DV) and but the providers of health, IPSTx, doctors, donors and patients have to know the benefits widely and try to reduce the initial risk with an excellent selection of DV and receiver.

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