conducted.[3] That is, the assumed advantages inherent to living donors, such as shorter cold ischemia time, preemptive immunosuppression, absence of the consequences of donor's cerebral death, etc. do not appear to provide for better results with this type of donor.

By contrast, the influence of other factors, such as age, sex, body surface area, and HLA system compatibility between donor and receptor and waiting time on dialysis on transplant outcome is known. A shorter time on dialysis is the only advantage that use of a living instead of a cadaveric donor for transplant may offer. It should therefore be considered that acceptance of a living donor to obtain the beneficial effect of shortening the time on replacement therapy may be counteracted by the presence of incompatibilities in the other factors.

On the other hand, increases in the number of cadaveric donors are made possible by reduction of family refusals and promotion of extraction in non-beating heart donors. The excellent activity of Hospital Clínico in Madrid in this field should be extended to other extracting hospitals.[4]

With regard to the potential iatrogenics of kidney removal in donors, while no conclusive studies are available, most authors advise against use of non-optimal donors because of the potential long-term implications.[5]

In conclusion, I think that an indiscriminate increase in kidney transplants from living donors with the single purpose of increasing the number of transplants should not be considered. Each potential transplant pair should be studied to decide whether or not transplant is recommended, and mid-term studies should be started on the potential implications of donor nephrectomy.

1. Domínguez-Gil B, Pascual J. El trasplante renal de donante vivo en España: una gran oportunidad. *Nefrología* 2008; 28: 143-7.
2. Guirado L, Vela E, Clèries M, Díaz JM, Facundo C, García-Maset R, Registro de enfermos renales de Cataluña. ¿Por qué el trasplante renal de donante vivo da mejores resultados que el trasplante renal de donante cadáver? *Nefrología* 2008; 28: 159-67.
3. Solà R, Vela E, Cleries M, Guirado Ll, Diaz JM, Facundo C, Deulofeu R. Living donor kidney transplantation in Catalonia: comparison with cadaveric kidney donors. *Transplant Proc* 2007; 39: 2208-9.
4. Sánchez-Fructuoso AI, De Miguel Marqués M, Prats D, Barrientos A. Non-heart-beating donors: experience from the Hospital Clinico of Madrid. *J Nephrol* 2003; 16: 387-92.
5. Boudville N, Prasad R, Knoll G, Muirhead N, Thiessen-Philbrook H, Yang RC, Rosas-Arellano P, Housawi A, Garg AX. Meta-analysis: risk for hypertension in living kidney donors. *Ann Intern Med* 2006; 145: 185-96.

R. Solà Puigjaner
Fundació Puigvert
Correspondence: *Ricard Solà Puigjaner. rsola@fundacio-puigvert.es. Fundació Puigvert. C/ Cartagena, 340. 08025 Barcelona. España.*

Renal function recovery on hemodialysis

Nefrología 2008; 28 **(5)** 562-563

To the editor: Advanced renal insufficiency requiring hemodialysis other than acute tubular necrosis may be totally or partially reversed in certain diseases.[1] More effective and aggressive treatment may be able to improve prognosis of conditions such as autoimmune,[2-4] tumoral,[5,6] and even cardiovascular diseases.[7,8] Some of these conditions were doubtfully amenable to renal replacement therapy until recently. In this group of new diseases admitted for hemodialysis, relative recovery of renal function may be seen without this involving discontinuation of such treatment in all cases. Our experience is briefly summarized below.

The first case reported is a 56-year-old male recently diagnosed of IgA multiple myeloma with plasma cell infiltration of 27%. He was referred to us with laboratory data suggesting advanced renal insufficiency (ClCr 7 mL/min, Cr 8.3 mg/mL) and no apparent signs of hemodynamic decompensation, hypercalcemia, or nephrotoxics. `Dialysis and simultaneous specific treatment for his underlying disease were immediately started. Three months after the first dialysis session, the patient has serum Cr levels of 2.36 mg/dL.

The second case was a 16-year-old female who attended the emergency room for a general syndrome of fatigue and anorexia, and reported a pharyngeal process in the previous days. Serum Cr levels were 10 mg/dL, and dialysis was therefore started. Laboratory tests suggested glomerulonephitis, and renal biopsy confirmed the presence of endocapillary and extracapillary proliferation with 50% of cell crescents. Corticosteroid and cyclophosphamide were administered as a bolus. Serum Cr levels of 1.4 mg/dL were found at 15 days.

The third case was an 83-year-old male patient admitted for fatigue who was found advanced uremia (Cr 5.8 mg/dL) and clinical and biological evidence of rapidly progressive glomerulonephritis. No renal biopsy was performed because of the patient age and poor cooperation. He was treated with corticosteroid and cyclophosphamide boluses. After 6 months on hemodialysis, serum creatinine value was 3.5 mg/dL, and session time was shortened.

A fourth, more complex case was that of a 64-year-old male patient with a history of alcohol-induced cirrhosis and moderate renal insufficiency who was admitted in a state of overshoot uremia. He underwent regular hemodialysis and recovered a certain renal function, but total withdrawal from replacement therapy was not considered appropriate because of his initial severe status and the great improvement in his quality of life.

Finally, regular hemodialysis for refractory heart failure was started in a 67-year-old male patient with Cr levels of 6 mg/dL. He had been diagnosed dilated cardiomyopathy based on echocardiographic data. Since hemodialysis

Table I.

Dx	Cr 1	Interv (days)	Cr 2	Age	HD disc.	Morb.
MM	8.3	días	2.65	58	Yes	0
AgGN	11	15	1.4	16	Yes	0
RPGN	5.8	120	3.3	82	No	0
Cirrhosis	8	90	3.6	67	No	0
CRS	6.5	73	3.8	70	No	0

Dx: Diagnosis. Cr 1: Baseline Cr. Interv (days between Cr 1 and Cr 2). Cr 2: Control creatinine. MM: Multiple myeloma. CRS: Cardiorenal syndrome. HD disc.: Exit from program. Morb.: Morbidity in admission days.

was started 16 months ago, the patient has not required any hospital admission, performs a normal physical activity, and has substantially recovered renal function. Hemodialysis discontinuation is not considered appropriate.

While it is true that our patients could be considered in some case potentially recoverable, considering the severity of the baseline condition and/or underlying disease, no statement could be made a priori. Special mention should be made of the improved quality of life and absence of hospital admissions once replacement therapy was started. The indication for monitoring of residual function is emphasized.[9,10]

1. Sekkarie MA, Port FK, Wolfe RA, Guire K et al. Recovery from end-stage renal disease. *Am J Kidney Dis* 1990; 15: 61-5.
2. Levy JB, Hammad T, Coulthart A, Dougan T, Pusey CD. Clinical features and outcome of patients with both ANCA and anti-GBM antibodies. *Kidney Int* 2004; 66 (4): 1535-40.
3. Jenette JC. Rapidly progressive crescentic glomerulonephritis. *Kidney Int* 2003; 63 (3): 1164-77.
4. Serra A, Romero R. Fracaso renal agudo en las vasculitis sistémicas asociadas a anticuerpos anticitoplasma de los neutrófilos (ANCA) en pacientes de edad avanzada. *Nefrología* 2001; 21: 1-8.
5. Knudsen LM, Hjoth M, Hippe E. Renal failure in multiple myeloma: reversibility and impact on the prognosis. Nordic Myeloma Study Group. *Eur J Haematol* 2000; 65 (3): 175-81.
6. Bladé J, Fernández-Llama P, Bosch F, Montolíu J et al. Renal failure in multiple myeloma: presenting features and predictors of outcome in 94 patients froma a single institution. *Arch Intern Med* 1998; 158 (17): 1889-93.
7. Marenzi G, Grazi M, Assanelli, Campodonico J et al. Circulatory respons to fluid overloada renoval by extracorporeal ultrafiltration in refractory congestive Heart failure. *J Am Coll Cardiol* 2001; 38 (4): 963-8.
8. Sheppard R, Panyon K, Pohwani AL, Kapoor A et al. Intermittent outpatient ultrafiltration for the treatment of sever refractory congestive heart failure. *J Card Fail* 2004; 10 (5): 380-3.
9. Gámez C, Teruel JL, Ortuño J. Evolución de la función renal residual en enfermos tratados con hemodiálisis. *Nefrología* 1992; 12: 125-9.
10. Rodríguez Benítez P, Gómez Campderá FJ, Rengel M, Anaya F. Recuperación de la función renal en pacientes en programa de diálisis. *Nefrología* 2002; 22 (1): 92-3.

L. Quiñones Ortiz, A. Suárez Laurés, A. Pobes Martínez and R. Forascepi Roza
Servicio de Nefrología. Hospital Cabueñes. Gijón.
Correspondence: *Luis Quiñones Ortiz. luysquio@hotmail.com. Hospital Cabueñes. Camino de los Prados, 395. 33203 Gijón (Asturias). España.*

Recovery of total innmunoglobulin and immunoglobulin subclasses in nephrotic syndrome: deflazacort *vs* methylprednisone

Nefrología 2008; 28 **(5)** 563

To the editor: Hypogammaglobulinemia in nephrotic syndrome (NS) is a condition attributable to increased catabolism and urinary loss of immunoglobulins.[1,2]

Patients with NS have an increased risk of infection, primarily caused by capsulated germs (pneumococci, *Hemophilus influenzae).*[3,4] There is evidence suggesting that IgG2 are antibodies protecting against pneumococci.

Our purpose was to study recovery of the different immunoglobulin subclasses in patients with NS treated with methylprednisone and deflazacort during remission and relapse.

PATIENTS AND METHODS

Eleven patients with a mean age of 48 months (range, 16-52 months) were studied. An interventional, single blind, clinical study, randomized for treatment start and with treatment crossover after the first relapse, was designed.

Methylprednisone (MPD) was given at 48 mg/m^2/day for 6 weeks, followed by 2/3 of the dose every other day for the next 6 weeks.

The equivalent dose of deflazacort (DFZ) was 72 mg/m^2/day (maximum 90 mg/day), with the same therapeutic scheme.

Blood samples were taken at relapse and 40 days after remission was achieved to measure total IgG and its subclasses by the radial immunodiffusion method.

RESULTS

Mean times on remission were 7.8 ± 0.36 days with MPD and 8.3 ± 0.22 days with DFZ.

Mean times to relapse were 85 ± 3.8 days with MPD and 102 ± 4.19 days with DFZ.

Both total IgG and IgG1 similarly recovered with both corticosteroids, but IgG2 and IgG3 only significantly increased with DFZ. Percent recovery of IgG and its subclasses was asymmetric during remission.

IgG1 showed the greatest recovery, while IgG2 reached 50% of normal value. The same imbalance was found with both treatments.

While this was not considered as an objective, it may be stated that the incidence rate of infection by capsulated germs was not significant with both corticosteroids (p 0.12) and that less adverse effects occurred when DFZ was used (hypertrichosis, Cushingoid appearance, ocular hypertension, hyperglycemia).

CONCLUSIONS

We found an imbalance in recovery of IgG subclasses during remission of NS treated with both corticosteroids, but a better recovery of such levels was achieved with DFZ.

1. Longsworth IG, MacInnes DA. An electrophoretic study of nephrotic sera and urine. *J Exp Med* 1998; 71: 77-82.
2. Oxelius V-A. IgG Subclass levels in infancy and childhood. *Act Pediatr Scand* 1979; 68: 23-27.
3. Lowy Y, Brezin C, Neauport-Sautes C, Theze J, Fridman WH. Isotype regulation of antibody production. T-cell hybrids can be selectively induced to produce IgG1 and IgG2 subclass-specific suppressive immunoglobulin-binding factors. *Proc Natl Acad Sci USA* 2003; 80 (8): 2323-7.
4. Lowy Y, Theze J. Regulation of IgG1 and IgG2 subclass expression by adjuvant-activated splenic suppresser T-cell Cell. *Immunol* 1999; 91 (2):467-76.

M. Liern, S. Diéguez and C. Canepa
Servicio de Nefrología. Hospital de Niños Ricardo Gutiérrez. Buenos Aires. Argentina.
Correspondence: *José Miguel Liern. jliern@yahoo.com. Hospital General de Niños Ricardo Gutiérrez. Alberti, 1880. 1714 Ituzaingo (Buenos Aires). Argentina.*

Rhabdomyolysis after correction of severe hyponatremia due to an attack of acute intermittent porphyria

Nefrología 2008; 28 **(5)** 563-564

To the editor: A vascular mechanism responsible for renal damage during at-