hibitors among patients who received kidney transplants from marginal donors at the University Hospital of Salamanca, comparing the effects of the drug in these patients with another group of recipients of young kidney transplants who received treatment from the start. We performed an observational, descriptive, cohort study of all transplants carried out at our hospital between 2008 and 2011. Patients were divided into two groups: recipients of standard kidneys, who received tacrolimus treatment starting before the transplant was performed, and sub-optimal kidney recipients (donor and recipient older than 55 years of age, cold ischaemia time greater than 1 day, cardiovascular death, serum creatinine greater than 2mg/dl, and non-heart beating donors), in which the medication was introduced on the fourth day. All other immunosuppression was maintained in both groups: basiliximab, steroids, and mycophenolate mofetil, as well as anti-infection treatment.

The variables analysed included: creatinine at the time of patient discharge and the presence of ATN, acute rejection, and infections within three months after transplantation. We used SPSS® statistical software, version 15.0, for all statistical analyses, which involved Student's t-tests and chi-square tests, using a significance level of $P<.05$ and expressing variables as percentages, means, standard deviation, and relative risk.

During the study period, a total of 160 patients received kidney transplants. Of these, 43.8% received pre-transplant tacrolimus, and 56.3% received tacrolimus starting on the fourth day post-transplant.

Mean creatinine in the early introduction group was 1.9±1.25mg/dl, and this value was 2.64±1.48mg/dl in the late introduction group ($P=.098$). All other results are expressed in Table 1.

The late introduction of calcineurin inhibitors is safe in the short-term, since, in comparison with grafts from young donors in which recipients received immunosuppression from the start, these patients did not exhibit a significant increase in parameters for renal dysfunction or secondary side effects. In this manner, the differences observed between the two groups may be due simply to the worse condition of marginal kidneys, rather than being due to any negative influence of the late introduction of medication on the immediate post-transplant patient evolution.

The results of our study, together with the results from previous studies that have established long-term safety, support the use of this immunosuppression regimen for treating recipients of marginal kidney grafts.

Conflicts of interest

The authors declare that they have no conflicts of interest related to the contents of this article.

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Table 1. Comparison of the appearance of complications between the two study groups

	Early Tacrolimus	Late Tacrolimus	RR	*P*
Acute tubular necrosis	8.6 %	18.8 %	0.605 (0.277-1.320)	0.093
Early infections	15.7 %	24.4 %	0.482 (0.199-1.168)	0.176
Acute rejection	11.4 %	18.9 %	0.643 (0.335-1.235)	0.197

[a] RR: relative risk.

Terminal chronic kidney disease in Gambia. A one-year study

Nefrologia 2013;33(1):144-6

doi 10.3265/Nefrologia.pre2012.Jun.11469

To the Editor:

Terminal chronic kidney disease (TCKD) is an important issue for public health, given its high incidence, prevalence, morbidity and mortality and socioeconomic cost.[1]

No reliable statistics exist in Africa concerning the incidence of TCKD and

the South African Dialysis and Transplant Registry only includes patients who are eligible for transplant. Therefore, the availability of dialysis and transplants is extremely variable with a treatment rate that fluctuates in the north between 30 and 186.5 per million population, depending on the programmes in the other countries, the availability of funds and donors.[2]

In October 2006 in Gambia, haemodialysis was started on patients with TCKD through donations received from other countries, as well as through the human resources aid offered by Cuba, which was a step forward in health services. The possibility of receiving this therapeutic treatment was provided to some patients who would have previously had to be transferred to Senegal.

This study shows, for the first time, statistical data of the new cases diagnosed with TCKD in Gambia with Cuban medical cooperation. A cross-sectional descriptive study was carried out on 69 TCKD patients who required renal replacement therapy in the Royal Victoria Hospital (Banjul) in 2009. The patients' characteristics are presented in Table 1.

The authors consider that the incidence of this disease in Gambia is much higher, since this study only deals with the patients diagnosed in the Royal Victoria Hospital of the capital city, which only provides service to a part of the population, leaving many other TCKD patients in the rest of the country with or without confirmed diagnosis who were not included in the research statistics but who would undoubtedly increase considerably the real number of incidents with TCKD in the country.

Nevertheless, it is a situation that is particular to Gambia, since the haemodialysis services are free with access for everybody, independently of their economic means. However, it only has five artificial kidneys, which does not satisfy demand and explains why only 31.8% of patients received renal replacement treatment. This limitation in material resources means that it is necessary to select people for haemodialysis, with those who have low life expectancy, the elderly, those who cannot travel to the hospital at least twice a week to receive treatment and those who are hepatitis B-positive or HIV positive being excluded.

The average age was relatively low if we take into account the fact that there is currently a global trend towards the increase in the age of patients on dialysis, but we consider that this is due to the low life expectancy of the Gambian population, which is 56 years.

It was interesting that no case of diabetes mellitus was found among the patients since it is the main cause of TCKD worldwide.[3-5] This could be explained by the low average age of the patients, since diabetes mellitus type 2, otherwise very frequent in this country, leads to TCKD after a long time with diabetes. We consider that there must be a high prevalence of chronic kidney disease of diabetic aetiology, which has not been properly diagnosed due to the precariousness of the health system.

The situation described in this study is typical of poor countries, which cannot maintain a dialysis and transplant programme, and is very frequent in Sub-Saharan Africa, where Gambia is located.

Table 1. Patients' characteristics

New cases of TCKD	69
PMP cases	46
Patients who started HD (No/%)	22(31.8)
Sex (No/%)	M: 41(59.4)
	F: 28(40.6)
Age X(SD)	45.9 (12.4)
Medical history of pathologies	(No/%)
HTN	36(52.1)
None	24(34.8)
Prostate	6(8.7)
Nephropathy	3(4.4)
Complementary tests	
Hb $\bar{X}$ (DS)	70(1.9)
Creatinine $\bar{X}$ SD)	1425.6(366.1)
Proteinuria (No/%)	9(13)
HIV positive (No/%)	3(4.4)
HBsAg positive (No/%)	3(4.4)

SD: standard deviation; TCKD: terminal chronic kidney disease; F: female; Hb: haemoglobin; HD: haemodialysis; ATH: arterial hypertension; M: male; PMP: per million population; HIV: human immunodeficiency virus.

Conflicts of interest

The authors declare that they have no conflicts of interest related to the contents of this article.

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C) BRIEF CASE REPORTS

Mycophenolate mofetil induced severe, life threatening lower gastrointestinal bleeding

Nefrologia 2013;33(1):146-7
doi:10.3265/Nefrologia.pre2012.Jun.11512

To the Editor:
We present a case of kidney transplant recipient who developed a rare, life threatening, lower GI bleeding six months after the transplantation, possibly associated with MMF treatment.

The most common side effects of MMF are gastrointestinal (GI) disturbances (nausea, vomiting, abdominal discomfort, diarrhea or constipation), hematological disorders, hepatic dysfunction etc.[1,2] GI bleeding requiring hospitalization has been observed in approximately 3% of renal transplant patients, GI perforations have rarely been observed.[1]

A 73-year-old Caucasian male kidney transplant patient was hospitalized due to profuse haematochezia.

Six months prior to admission the patient received a renal transplant from a deceased donor due to an end stage renal disease. For induction therapy the patient received mycophenolate mofetil 1g and daclizumab 75mg preoperatively. Prednisone in a dose of 500mg was administrated intraoperatively. On the second post transplant day tacrolimus was introduced. The patient was discharged from the hospital with immunosuppressive regimen consisting of mycophenolate mofetil 750mg bid, tacrolimus 3mg bid and prednisone 20mg plus pantoprazole 40mg.

At admission, laboratory findings showed severe posthemoragic anemia (hemoglobin level 62g/L), slightly elevated kidney function parameters (BUN 13,9mmol/L, creatinine 137μmol/L) and clinical signs of hipovolemic shock. Coagulation parameters were within normal ranges.

Because of severe haematochezia the patient was admitted to gastroenterology intensive care unit where erythrocyte transfusions and crystalloid infusions were given for initial stabilization. His immunosuppressive therapy was continued and consisted of mycophenolate mofetil 750mg bid, tacrolimus 3mg bid and prednisone 20mg plus pantoprazole 20mg qd.

Two days upon admission a new episode of profuse haematochezia occurred and after basic bowel preparation, urgent colonoscopy was performed. Diverticular disease of left colon was found with intense bleeding in several diverticules which disabled local haemostatic therapy (Figure 1). After rinsing left colon with saline and epinephrine solution an octreotide therapy was administered (500mL saline with 0.6μg octreotide, 40mL/hour). Repeated erythrocyte transfusions were given. In total, the patient received eight erythrocyte units during a period of three days. In consultation with nephrologists, MMF dose was reduced to 250mg bid, and prednisone to 8mg while the dose of tacrolimus remained unchanged, 3mg bid.

The following day the bleeding had stopped with slow recovery in hemoglobin level. An ultrasound of kidney graft revealed normal kidney parenchyma with slightly increased arterial resistance index of 0.75 at the level of interlobar arteries.

At a discharge, on the 9th day the laboratory findings were satisfactory (hemoglobin level 133g/L, BUN 7,9mmol/L and creatinine 126μmol/L). Suggested maintenance immunosuppressive therapy consisted of mycophenolate mofetil 250mg bid, tacrolimus 2mg bid and prednisone 8mg daily. The patient is well without symptoms of GI toxicity or rejection for 5 months.

MMF is used in treatment regimens as an immunosuppressive agent in both solid organ and bone marrow/peripheral blood stem cell transplantation, as well as in treatment of autoimmune disorders, such as lupus.[3] Drug effects are mediated via the active metabolite, MPA which seems to be responsible for GI toxic effects. GI adverse events are common following renal transplantation and all immunosuppressive regimens have been associated with such events. They are the most frequent problems associated with MMF therapy occurring in up to 20%[4] or, in some