

Cuba's Kidney Transplantation Program

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ABSTRACT

The first kidney transplant in Cuba was performed on 24 February 1970, using a cadaveric donor. In 1979, living donor kidney transplantation began between first-degree relatives. A total of 2775 patients are enrolled in renal replacement therapy in 47 hospitals across the country, 1440 of whom are awaiting kidney transplantation. Organs for the kidney program are procured in 63 accredited hospitals equipped for multidisciplinary management of brain death. Accordingly, over 90% of transplanted kidneys are from cadaveric donors. Identification of potential recipients is carried out through a national, computerized program that affords all patients the same opportunity regardless of distance from a transplant center, and selection of the most suitable candidate is based primarily on HLA compatibility.

KEYWORDS Chronic renal failure, kidney transplantation

DISCUSSION

Kidney transplantation (KT) in Cuba began in 1970 with a rate of 1.1 per million population (pmp), increasing steadily to 22.2 pmp (248 KT) in 1994, placing Cuba 10th in the world. Later, for well-known reasons,* organ donations and transplants decreased, falling to 8.2 pmp in 1998. Since then, the rate has slowly and steadily recovered, reaching 12.1 pmp in 2008.[1,2]

The first 300 cadaveric donor (CD) transplants were carried out without benefit of human leukocyte antigen (HLA) compatibility testing or crossmatching, only with blood grouping. Later, in 1979, living donor (LD) transplants between first-degree relatives were begun.[3] To date, 319 such transplants have been performed in four accredited centers, in addition to 3926 CDKT, totaling 4245 KT by the end of 2008.

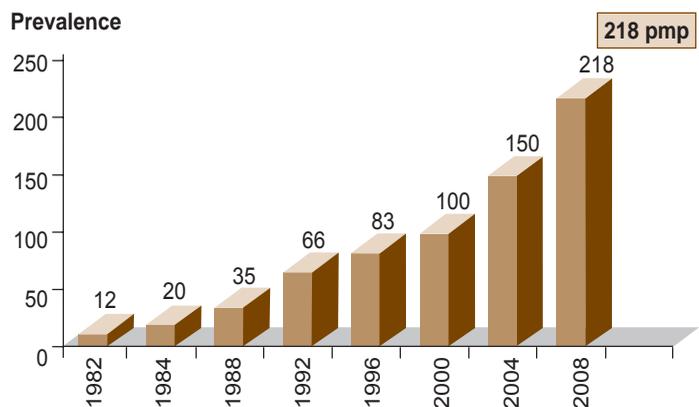
Maintaining this pace of transplantation in Cuba has required working in multidisciplinary teams in 63 hospitals equipped for management of brain death (BD), ensuring that over 90% of transplants involve CDs. This figure is comparable to that achieved by most leading nations in this field, and is thus significant for our region.[1] Donation rates have ranged from 15 to 18 pmp over the past 10 years; in 2008, the rate was 15 pmp. A sizeable percentage of organs had to be discarded post-harvest because of under-trained organ recovery teams. Half of the losses were due to surgical problems, poor quality of lymph nodes for tissue typing, and perfusion and/or preservation problems. The other 50% of losses were due to inability to identify recipients, particularly for blood types B and AB; prolonged cold ischemia; hepatitis B positive donors; and other minor causes.[4]

These 4245 kidney transplants have been made possible by a national nephrology program with a network of 47 facilities that treat all dialysis patients as well as those awaiting a preemptive

or early KT (pre-dialysis clinic), a service begun in 1990 in the Nephrology Institute, the country's lead institution for this specialty. The KT program relies on five centers in the capital [*Havana*] and four in the rest of the country.[3] At the end of 2008, 2775 patients were enrolled in the Chronic Kidney Failure (CKF) Program—100 receiving peritoneal dialysis and the rest hemodialysis.

Figure 1 reveals the epidemic behavior of CKF in Cuba. In 2008, 218 patients pmp were receiving dialysis.

Figure 1: Increase in Chronic Kidney Failure, National Chronic Kidney Failure Program Indicators



Source: National Kidney Transplantation Coordinating Center, 2009

The causes of CKF in Cuba are the same as in developed countries: diabetes mellitus, hypertension, and glomerulopathies are the leading three.[5] International studies on the economic impact of dialysis and KT have clearly shown that KT is two-thirds less expensive [than dialysis] the first year following surgery, after which it becomes even more economical. From a biological point of view, KT is also preferable to dialysis.[5,6] Of all Cuban dialysis patients, 51.8% are in the KT program, classified in three categories: suitable, unsuitable, and temporarily suspended.

The 47 facilities providing renal replacement therapy work closely with the primary health care system, which refers patients to specialty care to begin therapy as soon as needed.

In our system, the teams that diagnose BD and harvest organs are independent of those that perform transplants, ensuring adherence to ethical standards conducive to proper functioning of these programs.[6,7]

BD diagnosis is based primarily on clinical criteria, although most hospitals use confirmatory tests such as transcranial Doppler. Once BD is established, donation is refused in only 12% of cases, one of the lowest rates in the world.[4]

During the first years of the Cuban KT program, cadaveric donors identified by cardiac arrest and cerebral anoxia were used. In the

1990s, these criteria were revised so that all donors are the result of BD from traumatic brain injury (TBI) or hemorrhagic stroke (HS). In recent years, HS donors have overtaken TBI as most frequent (Figure 2), proportionally accompanied by more advanced age.[4] However, in the last three years, donor age has dropped, taking into account initiation of multi-organ donation; in fact, no multi-organ donor has been over age 50.

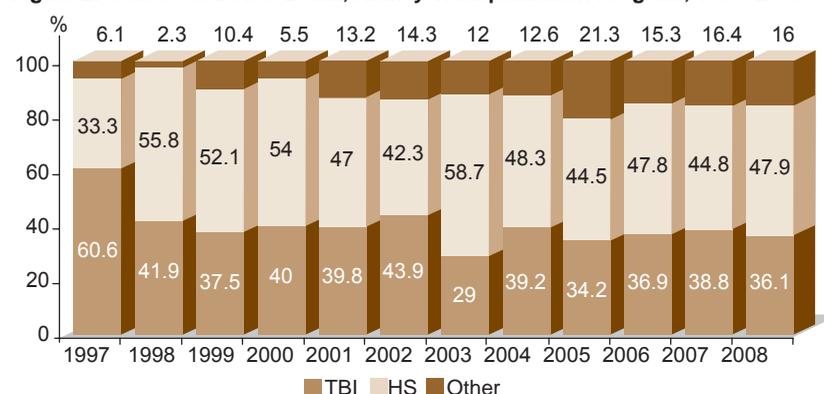
Living donor kidney transplantation (LDKT) began in 1979, and has always been between first-degree relatives (parents, siblings, or children) (Figure 3).

Since 1988, selection of ideal recipients has been done automatically, taking into account degree of HLA compatibility and other variables, such as percentage of anti-HLA antibodies, age and weight compatibility, etc. The recipient waiting list is updated monthly, managed by the Nephrology Institute which houses the national serum bank; when a patient is identified as best HLA match, the organ is sent to his or her KT center.[3]

In summary, Cuba's KT program is experienced and well developed. KT pmp rates are among the best in the region, particularly considering that over 90% involve cadaveric donation with selection based on degree of HLA compatibility—without a doubt the key to successful short-, medium-, and long-term survival.[8]

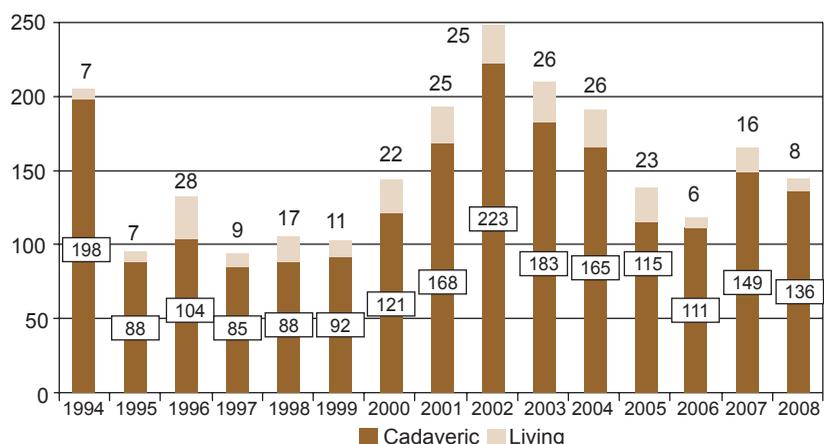
*MEDICC Review Editors' note: The authors refer to the economic crisis of the 1990s.

Figure 2: Causes of Donor Death, Kidney Transplantation Program, 1997–2008



TBI: Traumatic brain injury
HS: Hemorrhagic stroke

Figure 3: Types of Transplant: Cadaveric and Living Donors



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