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Short history about renal transplantation program in Iran and the world: Special focus on world kidney day

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World kidney day on 8 March 2012 provides a chance to reflect on the success of kidney transplantation as a therapy for end-stage renal disease that surpasses dialysis treatments for the quality and quantity of life and for cost effectiveness. The ISN and the Transplantation society have pledged to work together in coordinated joint global outreach programs to help establish and grow appropriate kidney transplant programs in low- and middle-income countries utilizing their considerable joint expertise. World kidney day 2012 provides a focus to help spread this message to governments, all health authorities and communities across the world.

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World kidney day on 8 March 2012 provides a chance to reflect on the success of kidney transplantation as a therapy for end-stage renal disease (ESRD) that surpasses dialysis treatments for the quality and quantity of life and for cost effectiveness. An experimental, risky, and very limited treatment option 50 years ago is now routine clinical practice in more than 80 countries. What was limited to a few people in a small number of academic centers is now routinely transforming lives in most high- and medium-income countries. The first successful

organ transplantation occurred between identical twins in Boston on 23 December 1954. Between 1965 and 1980, patient survival progressively improved to 90%, and graft survival rose to at least 60%. Thirty years on, unsensitized recipients of first deceased- or living-donor kidney transplants can expect 1-year patient survival of 95% and transplant survival of at least 90%. Recent developments have also led to excellent results from ABO blood group-incompatible transplants in recipients with low-titer ABO antibodies (1).

The largest numbers of transplantations are

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performed in the United States, China, Brazil, India and Iran, while the greatest population access to transplantation is in Croatia, Portugal, Spain, Austria, the United States, and Norway, but almost all countries have growing waiting lists, and transplantation meets only 10% of the global need. Barriers to broader application include, of course, economic limitations that appropriately place transplantation at a lower priority than clean water, sanitation, and vaccination. Even in high-income countries, the technical challenges of surgery and the consequences of immunosuppression restrict the number of suitable recipients, but the major restrictions on kidney transplantation rates are the shortage of donated organs and the small size of trained medical, surgical, and nursing workforces with the required expertise (1).

An important point is the difference between the number of living and cadaver organ donors. In America, while renal transplants from cadaver donors remained relatively stable between 1984-2001, there has been an increase in the organs obtained from living donors (2,3). In Europe, there is only a mild rise in organs taken from both living and dead donors (2). Developed countries boast the highest rates of cadaveric transplantation; the rates of cadaveric kidney donation in the United States, England, Australia, and Spain are 26.5, 25, 23.1, and 49.2 pmp, respectively (4). Spain has the highest cadaveric kidney donation rate in the world with over 99 percent of all transplants coming from deceased donors (5). In Asia, cadaveric renal transplantation comprises merely 10% of total kidney transplantation (6). Also, cadaveric renal transplantation in MESOT (Middle East Society for Organ Transplantation) countries constitutes 15% of total kidney transplantation, giving the region a favorable status in cadaveric transplantation (7). There are significant differences among countries; for example, most kidney transplantation performed in India is

from living donors (2). Similarly, most liver transplants in Japan are from living donors. In China, on the contrary, the majority of transplants are obtained from cadavers (1), mostly from subjects who are to be legally executed. This is based on the belief that by this humanitarian action these people, who have done wrong, shall become free of sins (2).

Iran has one of the most successful kidney transplantation programs in the region such that rates have reached 24 cases per one million people (8). These rates are 0.33 and 0.16 cases per one million populations for liver and heart transplantations, respectively. By the February 2007, 21359 renal transplants have been carried out in 25 transplant centers in Iran; 865 from cadavers, 2770 from Living Related Donors (LRD), and 17,724 from Living Unrelated Donors (LURD). The overall patient and graft survival of performed transplantation are comparable with other centers in the world (9). Considering the success of kidney transplantation and challenges about the living program, we intend to discuss this multi-dimensional issue.

The first renal transplant was performed in Shiraz University by Prof. Sanadizadeh (1967) (8, 10). Twelve years later, by the time of the Islamic revolution (1978), a total of around 100 renal transplantations had been performed in specialized centers in Shiraz and Tehran (8). Then, during 1980-1985, around 400 Iranian patients had undergone renal transplantation abroad (8). Most of those transplants took place in European countries, especially in England and to a lesser extent in the USA. Again, the first renal transplantation took place in 1984 in Tehran (11, 12) and during the next two years, almost 40 cases of transplantation had been performed in the country. Considering the successful renal transplantations performed and the increasing demand of patients for transplantation, waiting lists rapidly extended. From 1985 to 1987 two renal

transplantation teams were formed in Iran. During this period, 274 renal transplantations were done with living organ donors (8, 12, 13). At first, kidney donors were individuals chosen specifically from the patient's relatives but there were a number of patients without volunteer relative kidney donors. Therefore, a well controlled program was initiated in 1988 for the transplantation of non-relative organs (11, 13). At first the donations were mostly from emotionally related individuals such as the patient's husband or wife but this range rapidly extended to include strangers and in time, the number of non-relative organs predominated. In that situation, because only 30 percent of patients in the waiting list for transplantation could receive a kidney from LRD, this program was an obligatory approach for saving many lives not merely for ameliorating quality of life (14, 15). By virtue of the teaching of new medical teams, the number of renal transplantation teams increased from 2 to 32 by the end of 2000 (11). Concerning the negative experiences which existed about buying and selling of body organs in other countries, and to prevent organ trafficking, transplantation of foreigner individuals was banned unless the donor and recipient were from the same nationality. Furthermore, a state supported program was initiated to offer a sum of money (so-called rewarded gifting or compensated donation) to each donor. All hospital expenses are also paid by the government (16). Consequently, even patients of low socio-economic class could afford renal transplantation. Statistics show that more than 50% of renal recipients with kidneys from a non-relative donor came from a poor socio-economic background (16,17). Meanwhile, more than 80% of living kidney donors also come from a low socio-economic status. In a national survey in Iran, the ratio of living non-related donors to living related donors was 84% (17). It is important to mention that, in Iran, as an Islamic country, the passing of

religious decrees concerning the approval of organ transplantation by the religious scholars has played an important role in the progress of transplantation (18). However, lack of enough public awareness about the issue has caused a lower statistics of cadaver-donor organs than those of other countries (19).

In Islamic countries where laws and regulations are mainly based on Sunni's jurisprudential views, organ transplantation is recognized permissible as any other legitimate deed, on the basis of the argument that, according to known principles of Islamic laws, all that is not prohibited is necessarily legitimated. This viewpoint is based on a decision by Al-Azhar Islamic University taken in 1977 and a Fatwa by a group of great scholar of Saudi Arabia in 1981. This viewpoint is noted by legislators of Islamic countries and related laws in these countries are based on the views of religious scholars (20).

In Iran, decrees of religious leaders paved the way for ratification of the aforementioned act.

This was a significant turning point in the history of organ transplantation in our country. Substantial efforts have been made in recent decades to legalize the issue of organ transplantation, the first of which was establishing the supreme council of organ transplantation that consists of specialists and official authorities. One of the most important duties of this council was to clarify legal and religious aspects of organ transplantation. It seemed necessary for Iran's legislature to review various aspects of organ transplantation and ratify a law on it, because religious scholars has confirmed its permissibility in cases where saving another's life depends on such an operation.

There remain major challenges to providing optimal treatment for ESRD worldwide and a need, particularly in low income economies, to mandate more focus on community screening and implementation of simple measures to minimize progression of CKD. The recent designa-

tion of renal disease as an important noncommunicable disease at the UN High Level Meeting on Noncommunicable Diseases is one step in this direction (15). But early detection and prevention programs will never prevent ESRD in everyone with CKD, and kidney transplantation is an essential, viable, cost effective and life-saving therapy which should be equally available to all people in need. It may be the only tenable long-term treatment option for ESRD in low-income countries since it both is cheaper and provides a better outcome for patients than other treatments for ESRD. However, the success of transplantation has not been delivered evenly across the world, and substantial disparities still exist in access to transplantation, and we remain troubled by the commercialization of living donor transplantation and exploitation of vulnerable populations for profit (1).

There are transplantation solutions available that need augmentation across all economies. These include demonstrably successful models of kidney transplant programs in many developing countries; the growing availability of less expensive generic immunosuppressive agents; improved clinical training opportunities; governmental and professional guidelines legislating prohibition of commercialization and defining professional standards of ethical practice; and a framework for each nation to develop self-sufficiency in organ transplantation through a focus on both living donation and especially nationally managed deceased organ donation programs. The ISN and the Transplantation Society have pledged to work together in coordinated joint global outreach programs to help establish and grow appropriate kidney transplant programs in low- and middle-income countries utilizing their considerable joint expertise. World Kidney Day 2012 provides a focus to help spread this message to governments, all health authorities and communities across the world.

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