

Deceased-donor kidney transplantation in Iran: trends, barriers and opportunities

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Abstract

Having enjoyed considerable success in kidney transplantation in recent years, Iran has been named the most active country in the Middle East Society for Organ Transplantation region in providing equitable, quick, and intermediary-free access to affordable kidney transplantation for everyone regardless of gender and economic circumstances. We are, however, of the opinion that the Iranian model can benefit further from improving deceased-donor kidney transplantation, especially after a fatwa (Islamic edict) in the early 1980s lifted many religious and legal barriers. Deceased-donor kidney transplantation in Iran should be bolstered by establishing a transplantation model, increasing government funds, and encouraging participation of the general public in the Iranian Network for Transplant Organ Procurement. We recommend that an intensive media campaign be launched to heighten public awareness and more transplantation centres be involved in cadaveric transplantation with streamlined systems of cadaveric donations registration so as to facilitate the process of finding and relating the donors with potential recipients.

Although the efficacy of the Iranian model of kidney transplantation has already been established, there is a growing need to discuss the status of cadaveric transplantation and suggest means to improve it. We sought to survey the status of deceased-donor kidney transplantation in Iran with a view to offering a statistical description and stating possible limitations and opportunities.

In the Iranian model of kidney transplantation, the living non-related donor (LNRD) programme was designed for the expansion of the kidney donor pool, with genetically unrelated but emotionally related friends and altruistically motivated volunteers comprising the highest number of organ donors. Table 1 presents some important characteristics of this model (1).

The Renal Patients Support Charity (RPSC), a non-governmental charity founded in 1978 by patients with end-stage renal disease (ESRD) under the aegis of the government, runs all the stages of kidney transplantation. Patients with ESRD are confirmed officially, by nephrologists, after appropriate examinations and tests. If a patient is suitable for a transplant, the nephrologist refers him/her to the RPSC, which acts as

a liaison agency between potential donors and recipients. The altruistic volunteers register with the RPSC and undergo evaluation in the foundation's clinics. Donors are all 18-35 years old; permission for registration from parents or spouses is mandatory. The potential donor should be in complete health, and consents are obtained prior to introduction to the potential recipient. The RPSC receives no financial incentives for finding a donor or for referring the recipient and the donor to a transplantation centre. There is no role for an intermediary or agency in this model; the donor and recipient are introduced to each other at the RPSC and agree upon the centre to be referred to. All kidney transplantation centres are university hospitals and are licensed by the government (1, 2). The significance of the programme is highlighted by the fact that more than 50 per cent of the recipients are poor (3) and find in such intervention the difference between life and death.

The Iranian model of kidney transplantation is internationally recognised as the most active model in the Middle East Society for Organ Transplantation (MESOT) region with an annual rate of 25 per million populations (pmp) (2). Thus far, it has not only yielded patient and graft survival rates comparable to those in Western countries (1, 3) but also eliminated waiting lists and middlemen by offering coercion-free interventions on the basis of equal opportunities regardless of gender and economic circumstances (1).

Trends in cadaveric renal transplantation

By the year 2000, only 84 cadaveric renal transplantations had been performed in Iran (3). In April 2000, the Iranian parliament permitted cadaveric organ donation after brain death. Since then, cadaveric renal transplantation has enjoyed a gradual rise (2). Before the year 2004, less than one per cent of kidney transplantation in Iran came from cadavers, whereas cadaveric transplantation currently accounts for more than 10 per cent of the annual renal transplantation in Iran (1). In the years 2001, 2002, 2003, and 2004, 70, 96, 167, and 207 cadaveric kidney transplantations were performed in Iran, respectively (1, 2).

In Asia, cadaveric renal transplantation comprises 10 per cent of total kidney transplantation (4). About 2,500 to 3,000 cases of renal transplantation are performed in India each year (5), only two per cent of which are provided from deceased donors (6); this ratio in Korea is five per cent (7). In Malaysia, by the year 2005 more than 1,000 kidney transplants, the majority from living related donors, had been performed (8).

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Cadaveric renal transplantation in MESOT countries constitutes 15 per cent of total kidney transplantation, giving the region a favourable status in cadaveric transplantation (9). Some MESOT countries such as Turkey (10), Kuwait, and Saudi Arabia have a higher rate of cadaveric renal transplantation than that of Iran, while some others like Lebanon and Pakistan are behind Iran (11). 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 (11). Spain has the highest cadaveric kidney donation rate in the world with over 99 per cent of all transplants coming from deceased donors (12).

Cadaveric transplantation and religious beliefs

Transplantation has opened a Pandora's box of complicated religious and moral problems. Both Roman Catholics and Protestants are inclined to give their blessings to organ donation, believing that the prior disposal of body parts will not hamper resurrection. Jewish law, while prohibiting mutilation and delays in the burial of a corpse, makes provisions for overriding this disallowance to save a life. The Islamic Organisation of Medical Sciences paved the way for cadaveric transplantation many years ago by adopting a resolution recognising brain death. The largest religious belief which for a long time remained opposed to the idea of brain death is Shintoism in Japan, rendering this otherwise scientifically advanced country unable to practise cadaveric transplantation of organs until recently when the Japanese parliament was obliged to intervene. Hindu and Vedic scholars accept the concept of brain death (13). The concept of giving is deep-rooted in the Hindu school of thought; accordingly, there seems to be no major religious objection to the act of organ donation (14).

Problems regarding the concept of brain death

The concept of brain death — or more precisely brain stem death — has not failed to create its own share of problems, either. The burden on the medical community vis-à-vis the said issue is two-fold: not only are the professionals required to assure the public at large of the ethics of organ donation following brain stem death but they also have to ensure that the criteria of brain stem death are coherently enunciated and fastidiously enforced (15).

Barriers to cadaveric transplantation in Asian countries

In contrast to developed countries, the undeveloped nations have no organised cadaveric transplantation programme. Utilisation of cadaveric kidneys in Asian countries leaves a great deal to be desired (16), and an overwhelming majority of transplants are performed using living donors, which has given rise to the nefarious practice of selling kidneys for transplantation in some areas (17). In Asian countries, it is difficult to obtain cadaveric kidneys for renal transplantation not just because of a lack of legal recognition of "brain death" but because of certain socio-cultural beliefs such as concern about being cut up after death, the desire to be buried whole, dislike of the idea of one's kidneys being inside another person,

a misapprehension about brain death, and the idea of donation being against religious conviction (18). Cadaveric donation is also hindered by a host of beliefs about ghosts, labelled as "feudal superstitions." People in countries like Hong Kong, Japan, and the Philippines share the same Asian tradition of not parting with their organs after death. In some countries like Malaysia, kidneys can be harvested at death if the owner of the organs has earlier pledged his kidneys for donation prior to death (18). In response to organ shortages, the Chinese medical community has expanded the range of eligible sources to include those condemned to death as criminals (19); as a result, many patients travel to China for kidneys coming from executed convicts. The Japanese organ transplantation law, enacted in 1997, allows organ procurement from brain-dead as well as non-heart-beating cadavers in very restricted conditions (20).

Barriers to cadaveric transplantation in Iran

Despite its vast potential, cadaveric organ donation in Iran is and will remain under-utilised unless the following major barriers are removed: [1] inadequate public awareness (9,23), [2] attitude of the medical community (21, 23), [3] frequently held misconceptions about Islamic precepts (22), [4] different conceptions of brain death (21), and [5] a sub-standard network for cadaveric transplantation (22). It is also worthy of note that the other MESOT countries are reported to face almost similar problems (9).

We do not subscribe to the notion that religious and legal laws inherently stymie the propagation of cadaveric transplantation in Iran (4,9,24), especially after a groundbreaking *fatwa* (Islamic edict) by the founder of the Islamic Republic in the early 1980s (1, 25) prompted the Iranian parliament to finally lift major legal impediments to cadaveric transplantations in the year 2000 (1). Nor do we believe that a more intensive approach to living non-related renal transplantation would undermine deceased-donor transplantation in Iran (26).

Opportunities for cadaveric transplantation in Iran

Now that there is legislative and religious backing for cadaveric kidney transplantation in Iran, a country with a population in excess of 60 million, cadaveric kidney transplantation can only improve.

Over 15,000 deaths due to road accidents have recently been reported in Iran, with head injury being the most common cause of mortality (66 per cent) among victims mainly aged 40 or less (65 per cent) (27). Al-Attar believes that in Saudi Arabia with 1800 road accidents per annum, 12 per cent of road-related mortalities could be relied upon as potential donors (28). We cannot utilise the same method to estimate the number of potential donors because of the differences in the pattern of trauma-related brain death; however, the Iranian ministry of health in the year 2005 arrived at an estimate of 500 (29). In addition to brain-dead cadavers, non-heart-beating donors in the wake of accidents of various natures can be regarded as other potential kidney donors (30).

We suggest that, first and foremost, an Iranian transplantation

model be established so as to secure the involvement of the Iranian Network for Transplant Organ Procurement (IRANTOP). Through governmental support it is also possible to launch an effective media campaign for heightening public awareness of a wide range of pertinent issues such as the significance of granting informed written consent for cadaveric transplantation. Increasing the number of transplantation centres offering cadaveric transplantation services, ensuring a closer proximity of harvest and transplantation rooms in transplantation centres, developing intensive care techniques (30), identifying brain-death victims in an intensive care setting (21,24), and elevating the technical know-how of transplantation surgeons and physicians (31) can surely enhance the status of deceased-donor transplantation in Iran. Matesanz (32) rightly believes that kidney transplantation can be improved if potential cadaveric donors are converted into actual cadaveric donors.

Table 1. Characteristics of “Iranian Model” for living unrelated donors of kidneys

No coercion
Genuine donors (altruistically or emotionally motivated)
No middlemen
No financial gains for transplant team
No foreign recipients for Iranian donors
No foreign donors for Iranian recipients
Official financial inducements for donors
No waiting list
Equal opportunities for rich and poor alike

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