The History of Organ Donation and Transplantation in Iran

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Abstract

The first kidney transplant in Iran was performed in 1967, and this was the first organ transplant in countries that are current members of the Middle East Society for Organ Transplantation. In 1988, in response to the long waiting list at the Iranian Ministry of Health for kidney transplant, a state-regulated living-unrelated donor kidney transplant program was adopted. By 1999, the kidney transplant waiting list in Iran was eliminated. In 1989, a fatwa (religious approval) from the Supreme Religious Leader was obtained that recognized brain death and allowed deceased-donor organ transplant. Subsequently, transplant centers began performing deceased-donor kidney, liver, and heart transplants. In 2000, the Brain Death and Organ Transplantation Act was passed by the Iranian parliament, legalizing deceased-donor organ transplant. The transplant team at Shiraz began performing more deceased-donor kidney and liver transplants and became a successful deceased-donor organ transplant model in the country. By the end of 2012, there were 34,166 kidney (including 4,436 deceased-donor) and 2021 liver (including 1,788 deceased-donor), 482 heart, 147 pancreas, 63 lung, and several intestine and multiorgan transplants performed in Iran. In 2011, there were 2,771 solid-organ transplants performed in Iran (37 transplants per million population), and Iran ranked as number 33 among the 50 most active countries worldwide. In 2011 and 2012, Iran was ahead of all country members of the Middle East Society for Organ Transplantation in performing deceased-donor kidney and liver transplants.

Key words: Brain Death and Organ Transplantation Act, Middle East Society for Organ Transplantation

Introduction

The United Nations has classified Iran as a country with a high human development index. The human development index is a tool developed by the United Nations that is based on 3 dimensions: health, education, and living standard. This index is used to measure and rank countries by social and economic factors. There is a correlation between frequency of organ transplant, organ donation from deceased people, and the human development index. In Iran in 2011, the human development index was 0.742, total kidney transplant frequency was 30 transplants per million population, and deceased-donor frequency was 6 donors per million population.

Early Years of Organ Transplant in Iran

The first kidney transplant in Iran was performed in 1967, and this was the first organ transplant in countries that are current members of the Middle East Society for Organ Transplantation (MESOT). Iranian legislation for brain death and deceased-donor organ transplant was passed in 2000. The discussion of organ donation and transplant in Iran may be considered in 2 periods: before and after the Brain Death and Organ Transplant Act was passed.

From 1976 to 1985, there were approximately 100 kidney transplants performed in Iran. There were 12 kidneys donated by Eurotransplant (a European organization that allocates donated organs) and transplanted in Iran before 1979. As an example in
1977, two kidneys were shipped from the United States to Tehran for transplant. The kidneys were removed from a suicide victim and could not be used in the United States, and the surgeon in Germany did not use the kidneys because of the prolonged time on ice. Therefore, Eurotransplant arranged to send the kidneys to Tehran, where the kidneys were transplanted into 2 patients and functioned immediately. In 1977, there were 120 patients in Iran waiting for a kidney transplant.

Between 1979 and 1985, there were more than 400 patients who traveled abroad and received a kidney transplant using government funds. Most of these patients were transplanted in the United Kingdom from living-related donors. In 1985, the high cost of kidney transplant abroad prompted health authorities to increase kidney transplant activity inside Iran. There were 2 kidney transplant teams organized, and 274 kidney transplants from living-related donors were performed from 1985 to 1987. In 1988, in response to the long waiting list at the Ministry of Health for kidney transplant, a state-regulated living-unrelated donor kidney transplant program was adopted. As a result, there was a rapid increase in the number of transplant teams and transplants performed. By 1999, the kidney transplant waiting list at the Ministry of Health was eliminated.

**Fatwa (Religious Approval) of 1989**

From 1967 to 1989, kidney transplant donors were limited to living donors, (excluding 12 deceased-donor kidneys that were donated by Eurotransplant). In 1989, religious approval (fatwa) was obtained by Dr. Fazel from the Supreme Religious Leader that recognized brain death and allowed deceased-donor organ transplant. After the fatwa was issued in 1989, transplant centers began performing deceased-donor kidney transplants (especially the transplant team in Shiraz), liver transplants, and heart transplants, even though the legislation about brain death and organ transplant was not passed until 2000. The first deceased-donor liver transplant was performed by Dr. Malek Hosseini in Shiraz in 1992, and the first heart transplant was performed in Shariati Hospital in Tehran in 1993. From 1989 to 2000, before the organ transplant law was passed, all deceased-donor kidney, liver, and heart transplants were performed only by religious leaders fatwa.

**Brain Death and Organ Transplantation Act of 2000**

In 2000, after 2 previous rejections, the Brain Death and Organ Transplantation Act was passed by the Iranian parliament, legalizing organ transplant from deceased donors. After this law was passed, the Iranian Ministry of Health began establishing Brain Death Identification Units and Organ Procurement Centers throughout Iran.

The Brain Death and Organ Transplantation Act mandated that all organ transplants be performed only in university hospitals approved by the Ministry of Health. A written consent was required from first degree relatives. It was required that brain death should be diagnosed and certified by 5 specialists appointed by the Ministry of Health and not members of the transplant team, including a neurologist, neurosurgeon, internal medicine specialist, anesthesiologist, and forensic medicine specialist.

After the Brain Death and Organ Transplantation Act was passed in 2000, the transplant team at Shiraz University began performing more deceased-donor kidney, liver, and pancreas transplants and was a successful deceased-donor organ transplant model in the country. This transplant team performed the first liver and pancreas transplants in Iran, and it has performed most liver transplants, most deceased-donor kidney transplants, and all pancreas transplants in Iran. By the end of 2012, there were 34166 kidney (including 4436 deceased-donor transplants) and 2021 liver (including 1788 deceased-donor transplants), 482 heart, 147 pancreas, 63 lung, and several intestine and multiorgan transplants performed in Iran.

During the past 3 decades, the number of kidney transplants in Iran has steadily increased. In 2012, there were 2420 kidney transplants performed, including 914 deceased-donor kidney transplants. The frequency of kidney transplant in Iran in 2012 was 31 transplants per million population, including 2.2% kidney transplants from deceased donors, and this increased to 10% in 2003, 20% in 2008, and 38% in 2012. The increase in deceased-donor kidney transplants has been associated with a decrease in living-donor kidney transplants; from 2009 to 2012, the frequency of deceased-donor kidney transplant increased from 5.4 to 12 per million population, and the frequency
of living-donor kidney transplant decreased from 23.5 to 19.7 per million population. In 2011, Iran was among the 30 most active countries in kidney transplant worldwide, with 30 kidney transplants per million population (living-donor transplants, 20 per million population; deceased-donor transplants, 10 per million population).

Liver Transplantation

After the first liver transplant in Iran was performed in 1992, liver transplantation activity has steadily increased. From 1992 to 2012, there were 2021 liver transplants performed, including 88% from deceased donors. In 2012, there were 468 liver transplants performed, including 434 deceased-donor transplants (93%). Although there are 5 liver transplantation teams in Iran, most liver transplants have been performed in Shiraz. From 2009 to 2012, the frequency of deceased-donor liver transplantation increased from 2.2 to 5.7 per million population and the frequency of living-donor liver transplantation was unchanged (0.4 per million population). In 2011, Iran was among the 40 most active countries in liver transplantation worldwide, and most liver transplants were performed from deceased donors.

Other Transplantations

The first pancreas transplant in Iran was performed by Dr. Nick Egbalian in 2006. From 2006 to 2012, there were 147 pancreas transplants performed, all by the transplant team in Shiraz. Since the first heart (1993) and lung transplants (2000) were performed in Iran, there have been 482 heart, 63 lung, and several intestine and multiorgan transplants performed (data from 2000 to 2012).

In 2011, there were 2771 solid-organ transplants performed in Iran (37 transplants per million population), and Iran ranked as number 33 among the 50 most active countries worldwide and number 2 after Turkey among members of MESOT (per million population). However, in organ donation from deceased donors, Iran was ahead of all MESOT countries including Turkey, Kuwait, and Saudi Arabia.

In 2012, there were 3002 solid-organ transplants in Iran (39.2 per million population). Compared with 2 other leading members of MESOT, Turkey and Saudi Arabia, Iran was ranked as number 2 after Turkey in all solid-organ transplantations and number 3 after Turkey and Saudi Arabia in living-donor organ transplantation. However, Iran was ahead of all members of MESOT in performing deceased-donor organ transplants, including Turkey and Saudi Arabia (Figure 1). Among all members of MESOT in 2012, Turkey was ahead of all countries in performing living-donor kidney (31.5 per million population) and living-donor liver transplants (9.7 per million population), and Iran was ahead of all countries in performing deceased-donor kidney (12 per million population) and...
deceased-donor liver transplants (5.7 per million population) (Figures 2 and 3).12

References