ABSTRACT
The great advances in the technology of organ preservation, immunosuppression, and surgical procedures have resulted in success in saving lives. However, these advantages have raised major ethical, policy, and religious problems in organ transplantation. Extensive efforts have been made to address these problems in different communities. In this study the transplantation program and implementation of legislation in Iran is reviewed. The history of the organ transplantation “Act of Organ Transplantation and Brain Death,” which allows controlled living unrelated donors access to renal transplantation, is discussed as the main subject.

ORGAN TRANSPLANTATION is presently the treatment of choice for life-threatening failure of a number of organs. There has been a steady increase in the number of organ transplantations performed worldwide in the past decade. However, the shortage of available organs and the growth in the number of patients in need have resulted in long waiting lists. For solving this problem, methods have been proposed to expand the organ donor pool. These methods have posed questions about ethical conflicts. With the ongoing scarcity of cadaveric organs for transplantation, the use of living donor organs has been suggested, and implementation of legislation has occurred in Iran.

ISLAMIC PHILOSOPHY AND ETHICS
Islam has paid special attention morality and ethics. The core of Islamic teaching is the perfection of ethical conduct of a human being. According to Islamic belief each individual has a soul and body. The human condition depends on the eternal soul. All men are equally situated with respect to their spiritual perfection. God gave man the basic knowledge of “good” and “bad” at the time of his inception. On the other hand, human acts are of value if done by informed freedom. The solutions to ethical problems are derived from Islamic principles and updated in the the Holy Quran, which includes the traditions of the prophet of Islam and his successors (Sunna and Hadith), the consensus of scholars (Ijma), and wisdom (Aqil). Islam encourages helping others and saving lives. The Holy Quran states “and who so ever gives life to a soul, it shall be as if he has given life to all mankind” (5:32). According to religious sanctions (Fatawa), vital organs (such as the heart) cannot be donated before death. Donation of other organs is permitted but it should not be harmful to the donor. Donor and recipient consent are necessary.

CURRENT STATUS OF ORGAN TRANSPLANTATION IN IRAN
Transplantation has a long history in Iran. Avicenna (981 to 1037), the great Iranian physician, performed the first nerve repairs. Modern organ transplantation with newer methods dates to 1935, as shown in Table 1. Presently, Iran currently has one of the most successful transplantation programs in the Middle-East region. The overall patient and graft survival are comparable with other centers in the world.1-9 Multorgan transplantation was started in recent years and performed on several occasions.

Given that Islam represents the largest segment of the population in Iran, ethical issues are frequently discussed among physicians, legal experts, and religious scholars. Positive Fatawa is essential for approval of any parliamentary act. Consensus of physicians and religious leaders has paved the way for advancement of transplantation programs in Iran in recent years.

The “Organ Transplantation and Brain Death Act” was approved by parliament in 2000.10 According to the Act, brain death must be diagnosed and certified by four physicians, namely a neurologist, a neurosurgeon, a medical specialist, and an anesthesiologist. Members of the team that diagnoses and establishes brain death must not be part...
of the transplantation team. After confirmation of brain death, cadaveric organs and tissues are used for transplantation with the consent of the deceased (ie, written will or signed organ donor card) or next of kin. Despite sanctions by religious leaders, some people do not offer permission for cadaver organ donation. As of the end of 2000, only 84 cadaveric renal transplants have been performed in Iran, a number <0.8% of the total. Although cadaveric organ donation has increased in recent years due to people having signed organ donation cards, effective cadaver organ donation requires increased public awareness and better medical equipment and laboratory facilities. As shown in Table 1 in 2002, only about 6% of all renal transplants were from cadaveric sources. Likewise, the shortage of cadaveric donors is the greatest barrier to liver transplantation in Iran.1

Until 1988, all living donors were related to the recipient in Iran. But, due to national demand and the increasing number of patients, a controlled living unrelated donor (LURD) program for renal transplantation was adopted in 1988. As a result, the renal transplant waiting list was eliminated in 1999. In Iran, organ transplantation is assisted by a governmental award. The law related to the gift of organ donation was approved by the government of Iran in 1997. “Rewarded gifting” is reimbursed via the Charity Foundation of Special Diseases (CFSD), which is a nongovernmental organization.

Reports of world experiences with LURD renal transplantation, especially from countries of the Middle-East, South Asia, and South America, have raised concerns about the LURD program in Iran. But, due to the Islamic culture, there is no commercial transplantation in Iran. At present, transplantation procedures are performed only in governmental university hospitals. All hospital expenses are paid by the government. The transplant physician emphasizes the advantages of living related (LRD) vs LURD transplants recommending the use of an LRD. Donors are referred by the Dialysis and Transplant Patients Association (DATPA) or another popular charity association. Members of these associations are often patients or their families who have no financial incentives. The surgical team is not involved in this interaction. There are no “middle-men” for the transplant team. All donors are carefully examined with regard to the medical aspects. Foreigners are not allowed to undergo organ transplantation from Iranian LURDs; they must bring donors from their respective countries.

In the current decade, several studies have been published on the renal transplant characteristics of donors and recipients in Iran. In the various studies, the LURD/LRD ratios have been 45.1%,6 67.8%,5 80.8%,6 86.7%,6 90%,11 and 94%.7 According to the available results, more males than females are LURDs; the male-female ratio has varied from 3:1 to 9:1 in studies from different cities,2,5,6,9,12 with a ratio of about 1.7:1 among recipients.5,7,12 Most LURDs have been in their 30s or 40s, with a mean ages (±SD) of 29.5 ± 7.5,6 28.8 ± 6.5,8 and 32 ± 9.79 years. These documents negate the possible violation and coercion of women or children in Iran.

The literacy status of LURDs has shown their levels of education to not be significantly different from the recipients. In one study of LURDs, 6.2% had university, 63.4% high school, and 24.4% elementary school training, and 6% illiterate.12

All LURDs have been from the low or middle socioeconomic classes. In one study, 84% of LURDs were poor and 16% middle class.12 However, 50.4% of recipients were also poor, and 36.2% and 13.4% were middle class and wealthy, respectively.12 It is to be assumed that organ donation in all cases is voluntary, although poverty may be the principle incentive in some cases. However, responsible individuals attempt to dissuade poverty-based donation, and help those less fortunate in other ways. It is certain that donor and recipients accounts in Iran are not “haves” and “have-nots” fictions. It is notable that >80% of LURD renal transplant recipients in Iran have a potential LRD,2,13 but due to cultural reasons it is not used. Most recipients are reluctant to impose any emotional or physical pressure on their families, particularly their children or wives. Although there is rewarded gifting among LRD renal transplants as well most recipients, even those who are are poor, prefer to obtain an organ from unrelated donors.

**DISCUSSION**

There are noteworthy arguments for and against paid LURD transplantation worldwide. We should note that the risks of living donation are relatively low, when medically
suitable donors are selected. Donation can be performed with acceptable perioperative morbidity, no renal compromise and negligible perioperative mortality. The short-term risks are morbidity of about 20% and mortality of 0.03%. The long term risks of developing renal failure appear to be no greater than those for the normal population. The graft and patient survival results of LURD transplants continue to be superior to those of transplants from cadaveric donors, and are equivalent to those of LRD transplants. Fear of involvement in organ commercialism is the main barrier for acceptance of LURD transplantation by Islamic and non-Islamic authorities. Unfortunately, discussion about the sale of organs is overshadowed by cases of exploitation, murder, and corruption. Some studies have shown that physicians in underdeveloped countries have used kidneys from total strangers who were paid for their donation. The survival rates of patients and grafts have been poor among these illegal transplants. In addition, there have been some reported cases of HIV transmission to recipients. Those against paid donation say that selling a kidney begins a “slippery slope” toward selling vital organs such as hearts. Vendors are often not given proper care. They may also be underpaid or cheated, or may waste their money due to inexperience. Also they are likely to be too uneducated to understand the risk, which precludes informed consent. Furthermore, because these people coerced by their economic circumstances, their consent has sometimes been considered nongenuine. In parts of the world where women and children are essentially chattel, there can be a danger of them being coerced into becoming vendors. We are certain that there are none of the aforementioned problems in Iran. As noted earlier, the Iranian transplantation program is one of the most successful programs from the medical aspect.

It should be considered that, for some people, living organ donation (or selling) is more agreeable than cadaveric donation. However, do we have the right to harvest organs of the dead without permission, only presumed consent? The general public in some countries is against presumed consent, but cadaveric donation can be encouraged by means of increased education with regard to this issue.

Special attention should be paid to the psychosocial state of related donors. Are genetically unrelated donors much more vulnerable to coercion than related donors? Which of the two is better when there is no other alternative—ineligible consent obtained from a related donor under emotional pressure, or paid donation from someone in the grip of poverty? On the other hand, which of these would be superior—an unlawful donation without any protection and support of donors, or a controlled program with ethical standards.

In India, several thousand uncontrolled commercial renal transplants have been performed in private “back-street” clinics. Incomplete donor and recipient evaluations resulted in a high incidence of complications. The kidneys were sold by middlemen to wealthy patients. In 1994, the Indian government legislated against organ sales, a policy that was adopted by most states. As a result, the price of illegally transplanted kidneys in India has increased sharply.

The best way to address such problems would be by regulation or establishment of a central procurement system to provide screening, counseling, reliable payment, insurance, and financial advice. In 1998, the International Forum for Transplant Ethics concluded that organ trade should be regulated rather than banned. Thus, some investigators proposed a strictly regulated and strongly ethics-based market in live donor organs and tissues to prevent illegal LURD transplantation. Although no system of control is complete, there is much greater opportunity for exploitation and abuse when desperately needed goods are made illegal. If we hope to protect the exploited, we can do so only by decreasing the level of poverty that makes people vulnerable—or by controlling the trade.

What is the Islamic perspective? Transplantation from LURDs is not prohibited in Islam, yet organ selling is not permitted by most religious scholars. Despite the prohibition of organ vending, the recipient can thank the donor by offering a gift, such as money. Al-Mousavi et al sought the views of senior Muslim scholars on organ donation in six Islamic countries: Kuwait, Saudi Arabia, Iran, Egypt, Lebanon, and Oman. All 32 scholars agreed that organ trade is degrading and not permissible, but 22 (68.7%) permitted purchase of an organ to save life when the donor insists on selling and if the patient has no alternative. These scholars also support the idea of a reward in return for his “donation.”

CONCLUSIONS

The prevention of commercial dealing in organs is a most important aspect of the Iranian law. We must consider that cadaveric organ donation has not been successful, despite several decrees (fatwa) from religious leaders and approval by parliamentary act. In contrast, nonconsensual harvesting of cadaveric organs is morally unlawful and impractical in our country. Therefore, we have to find another pool for an organ supply.

Xenotransplantation is not performed in Iran due to technical obstacles and cultural barriers; indeed, this type of transplant has not been successful in other centers in the world. However, religious scholars are not opposed to transplantation from animals to humans. Reproductive cloning is prohibited in Iran, but stem-cell research and therapeutic cloning have recently begun after previous religious sanction by an Islamic national leader. In the near future we may be able to take advantage of these techniques to increase availability of organs and tissues, but until then we will have to adopt a morally preferable, controlled model emphasizing donation in order to save lives.

Recently, initial efforts have been made for a national transplant registry. At present, the Iranian Network for Organ Procurement (related to the Ministry of Health and
Medical Education) is responsible for supervision and coordination of activities. This network will pave the way for short- and long-term follow-up of results and for investigation of its psychosociologic suitability. We must consider the possible disadvantages of the current program. Steps should be taken to alleviate poverty and move toward “social justice.” Furthermore, living donors are often not given proper care and some of them do not receive follow-up visits after donation. A postoperative medical insurance plan has been offered to donors, but it needs to be long-term with sufficient information. Establishment of an independent management team that takes the side of the donor, with regard to medical and psychosocial aspects, is clearly necessary.

There is a need to motivate the general public to donate organs. Special emphasis must be given to cadaveric donation. The mass media may be a valuable means to motivate the population about organ donation. Medical, legal, ethical, and religious aspects of transplantation in Iran have been discussed in the book Comprehensive Outlook on Organ Transplantation (in Farsi). The second edition of this book is now in press. We hope that these attempts will increase general public awareness and encourage authorities and decisionmakers to prevent unadvisable or immoral practices in the field of transplantation.

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