Legalizing the Sale of Kidneys for Transplantation: Suggested Guidelines

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The practice of selling organs for transplantation has traditionally been viewed with disapproval by the medical community [1] and, in general, is outlawed. However, in the last decade, the number of dialysis patients in the western world has risen dramatically, without an accompanying rise in kidney transplantations. Consequently, an ever-increasing number of patients await a transplant, many of them dying before they can receive the transplant. Because of this, several voices have recently questioned the previous ban on commercialization of transplantation and have suggested that the debate be reopened [2–4].

In recent years the quality of life of dialysis patients has vastly improved, but there are still considerable problems associated with this treatment, the most important being the unacceptably high mortality rate of dialysis patients. A dialysis patient remains chronically uremic and has a much higher chance of dying of atherosclerotic cardiovascular disease or infection. The annual mortality rate of dialysis treatment varies between 15 and 20% in the United States, thus approximating the mortality of some kinds of cancer [5,6]. At present, transplantation offers the only means of reducing this high mortality. A recent study from the U.S. compared the survival of transplanted patients with that of dialysis patients on the transplant waiting list. The relative risk of death increased in the first 3 months after a transplant, but by one year had fallen to a third compared to that in dialysis patients still awaiting transplant. The difference in long-term life expectancy was also considerable. For example, the projected life expectancy for diabetic dialysis patients aged 20–39 years was 8 years, compared to 25 years after a transplant [6]. It is thus not surprising that most dialysis patients desperately want a transplant.

In addition to the problems of the individual patient, dialysis treatment is a national problem in the western world. The number of patients is growing from year to year and the patients are becoming sicker and older, with an increasing proportion of diabetics. In Israel for example, the number of dialysis patients has doubled in the last decade, but the proportion of diabetics on dialysis has *tripled* (from 7.8% at the end of 1989 to 24.8% at the end of 1999; data by courtesy of the Israel Dialysis and Transplant Organization, Ministry of Health). Thus dialysis, a very expensive treatment, consumes a growing proportion of national health expenditure. In the USA at the end of 1998, there were approximately 220,000 patients on hemodialysis [7], at a cost of more than $11 billion [8]. Transplantation costs significantly less than dialysis. A study from Canada showed that the cost of dialysis treatment and transplantation in the first year after transplantation was similar, but thereafter the care of a transplant patient cost less than 50% that of a dialysis patient [9]. Thus transplantation is cost-effective and results in a sizable saving as compared to chronic dialysis.

The only alternative for dialysis patients to improve their life expectancy and quality of life is a transplant. While transplantation is far from being a benign procedure, a successful transplant enables the patient to lead a more or less normal life, can restore fertility and, most importantly, appreciably increases life expectancy.

In most countries the majority of transplants come from cadaver donors. Since the supply of cadaver organs always falls far short of demand, the waiting lists grow longer. In the case of heart, liver and lung transplants, patients die within a relatively short time if they do not receive a transplant. In the case of kidneys, patients remain on dialysis, waiting sometimes years for a transplant and frequently die while waiting for a kidney. In Israel in the year 2000, 750 patients were on the waiting list for a kidney transplant. Of these, 188 transplants were performed in Israel and 34 abroad (the latter figure may be a gross underestimate) (data by courtesy of the Israel Dialysis and Transplant Organization, Ministry of Health). Most of those transplants performed abroad, if not all, were from living unrelated donors [10].

The only type of living organ donation sanctioned in developed countries is the "altruistic" donation. That is to say, no financial benefit to the donor is involved. Sale of organs has been specifically prohibited in the western world [1]. Thus living donation almost always occurs between close relatives and, more recently, also spouses. Occasionally, "emotionally related" donation is permitted, between friends for example. Rarely has donation on a purely altruistic basis ("non-directed" donation) been sanctioned [11,12]. However, the ban on sale of organs, a lengthening waiting list, and a general failure to increase cadaver kidney transplants have resulted in the creation of a black market in transplantations from unrelated living donors. Several years ago, kidneys could be bought only in

India and Iraq. The medical results of this illegal traffic have sometimes been catastrophic [13], but not always [14,15]. Today, a number of other countries has been added to this dubious list. In Israel it is an open secret that transplants are readily available abroad, and it is possible to *buy* a kidney in various countries including Turkey, Rumania and Russia, and neighboring states. The patient pays a large sum of money, only a small proportion of which is given to the donor. It appears that there is no regulation of this process and no protection of the rights of the donor; and even worse, the postoperative care of the donor is mostly inadequate.

There seems little doubt that the present situation only encourages proliferation of this black market, with the enrichment of unscrupulous doctors and middlemen at the expense of both recipients and donors. It represents the worst of all possible worlds – not enough transplants are performed, only the wealthy can afford it, and both donors and recipients are exploited.

What is the correct approach for the medical profession in Israel? The position of the western world until now has been unequivocal: the sale of organs is banned under any conditions [16]. Organ donation can only be altruistic. The situation is similar in Israel – the sale of organs is banned by the Ministry of Health, although it is not specifically illegal. However, this prevalent view is being increasingly questioned by authoritative voices [2–4].

In view of the growing waiting lists, the failure to appreciably increase cadaver donation, and the escalation of the black market in kidney donation, we believe that the time has come to reconsider this policy. In our opinion, sale of kidneys should be allowed under tightly controlled conditions in order to: a) protect both donors and recipients alike from exploitation, b) ensure proper medical care for both donors and recipients, c) increase the number of transplants performed, and d) reduce the high mortality of end-stage renal disease.

We suggest the following guidelines:

- Sale of kidneys should be sanctioned by law.
- Potential donors would apply to Israel Transplant (the Israel National Transplant Committee), which will be responsible for overseeing donor evaluation by a doctor, psychologist and social worker. In other words, the evaluation will be similar to that performed for any living donor.
- If the donor is found suitable, HLA typing and cross-match will be performed, and a suitable recipient sought among those currently awaiting a transplant. The criteria for recipient selection will be identical to those for a cadaver kidney.
- The donor's fee will be a standard one, according to a tariff fixed by the Ministry of Health, and will be paid to the donor following the operation by Israel Transplant. The fee will be exempt from tax.
- Israel Transplant will be responsible for long-term follow-up of the donors.
- Any commercial transplantation outside this framework will be illegal.

Many ethical objections have been raised in the past to organ sales [1–4,17]. We believe that in the face of an officially sanctioned and properly organized system such as the one proposed above, most of these objections can be overcome or rendered irrelevant. For example:

- *Taking an organ from a living donor violates the principle of primum non nocere (first, do no harm).* The violation of this principle lies in the fact that a physician does harm by removing a viable organ from a healthy person. However, the morbidity of this procedure is very low and mortality even lower, whereas the benefit to the patient is huge. Whether the donor gives the organ altruistically or is paid for the donation is irrelevant in this case. Since there is general agreement that a person can agree to donate an organ, providing that he or she has been fully informed as to the dangers, then we do not see any ethical objection on these grounds.
- *Only the poor will donate.* This is true, but as things stand today, such people will still seek ways to donate a kidney with no safeguards for their interests. There certainly appears to be no shortage of available donors at present, despite the illegality of the procedure. In the proposed system donors will be protected. Why should anyone be denied the right to earn money in this way, especially since by doing so he/she is benefiting someone else as well as society? After all, there are usually no restrictions on ways of earning money, many of which are often extremely dangerous.
- *Only the rich will obtain such kidneys.* This would be true in a free market system. However, in the proposed system, sales would be tightly controlled, the sale is to the Ministry of Health or its proxy, and there would be no transaction between the donor and recipient. Distribution of the donated kidneys will be identical to that for cadaver kidneys. Furthermore, the recipient would not pay for the kidney: The fee would be paid by the Ministry of Health, or by one of the health insurance funds.
- *Sales of organs will cause a drastic reduction in altruistic living donations and willingness of families to agree to donate cadaver kidneys.* Our proposal will neither replace the ongoing need to encourage families to donate kidneys to their sick relatives (which has the clear advantage of more immediate availability), nor reduce the need for public education concerning the gift of life to chronically sick patients – the result of agreeing to organ donation from cadavers. It is certainly true that not nearly enough has been done to promote altruistic donations, such as donor cards, and it is vital that publicity in this field be improved and given high priority.

We believe that society has an ethical obligation to perform transplants in as many dialysis patients as possible because this treatment greatly improves their life expectancy. Furthermore, it is what most dialysis patients fervently desire. Society would gain by the large reduction in treatment costs of end-stage renal disease, and also by returning younger patients to work and productivity. It seems clear at the present time that the only way to substantially increase the number of kidney transplants is to permit sale of kidneys by live donors. We contend that this should be allowed, under strictly controlled conditions. Such a scheme should also help to counteract the ugly international black market (with its almost inevitable exploitation of donors) that has developed in the

past few years. Since this is a national and ethical problem, in addition to being a medical one, we believe the matter should be carefully considered by a committee convened by the Ministry of Health, consisting of doctors, ethicists, dialysis patients, jurists and clergy.

The time has come to reconsider the traditional paternalism of doctors towards their patients. While we have usually tried to act in what we believed to be the best interests of our patients, this attitude, in the age of computers and the internet, has become anachronistic. Patients have easy access to the same information that we have, and are entitled to decide for themselves. Why should patients be forced to live by their physicians' values? Would any physician on dialysis treatment not choose to receive a living donor transplant if he or she had the option? So by what right do we deny this opportunity to our patients? At the very least, this is an issue that should be opened to honest debate, and the voices of our patients should be heard.

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Three are the gates to .... death of the soul
The gate of lust
The gate of wrath
The gate of greed

Bhagavad-Gita (300 BC), supreme religious work of Hinduism

Capsule

Stem cell help for aching muscles

The stem cells of skeletal muscle – satellite cells – are particularly well defined as they are easy to isolate and identify, occupying a niche between the plasma membrane and the basal lamina of each myofiber. To test whether this tissue-specific stem cell population could itself be renewed by stem cells from the bone marrow, LaBarge and Blau treated mice with whole-body irradiation to destroy the bone marrow and reintroduced new bone marrow cells that had been engineered to express green fluorescent protein (GFP). Between 2 and 6 months later, 5% of the satellite cells in the tibialis anterior muscles were labeled with GFP. The cells expressed muscle-specific proteins and were diploid – ruling out their generation by fusion of myoblasts with the introduced bone marrow cells. These bone marrow-derived muscle stem cells were also recruited to repair damaged muscle after exercise. Thus, stem cells throughout the body may be available to replenish tissues damaged in the course of daily life.

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