SPECIAL ARTICLE

DIALYSIS AND TRANSPLANTATION IN ISRAEL — AN OVERVIEW

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While many countries are still trying to find ways and means of offering treatment to all patients suffering from end-stage kidney failure, others have managed to organise some form of therapy for all the patients who need it. An interesting "down-to-earth" observation was published by the EDTA which shows that treatment of end-stage kidney failure is directly associated with the Gross National Product (GNP). Only countries whose GNP is higher than about US$ 3000/capita/year began organising such therapy, obviously because of the huge expense needed to maintain uremic patients alive for many years. (figure 1)

Israel, like other countries, faced great economic difficulties in organising dialysis and transplantation. At first, in the Sixties (1964-1970), transplantation was scarce and so were the spaces available for dialysis. Selection committees were appointed in some hospitals to select for treatment only those patients who would "benefit most" from dialysis. Very soon, the unwillingness to refuse some patients, thus letting them die untreated, sharpened the moral aspects of such selections. Leaning on an old proverb which states "He who has saved a life- as if he has saved the whole world", members of these committees, together with the nephrologists in charge, pressed hard on the authorities to open up adequate facilities to all patients in need of treatment. The part played by the Press and the news media was of great importance in shaping public opinion and in the later development of these services. At present, all patients needing dialysis are accepted without undergoing selection.

Following these events, the number of patients on dialysis in Israel increased from 369 in 1975 to 785 in 1981 and to 823 in April 1982 (figure 2). With a population of about 4 million, we obtain a figure of 205 patients on dialysis per 1 million population. Thus, despite economic odds, Israel has managed to reach a high number of treated patients. It was calculated that the yearly increase in the number of patients will decrease and level off in a few years, when the absolute number of patients will be about 1000 i.e. about 250 per million.

The ability to give dialysis and transplantation treatment to all patients who needed it was achieved by using certain practical procedures which enable existing units to perform more dialysis and transplantation. These procedures are as follows:-

1. The re-use of hollow — fiber dialyzers: by immediately washing these dialyzers after use with water, then hydrogen peroxide, sodium hypochlorite and finally sterilizing them with formaldehyde in sterile saline, we were able to re-use the dialyzers upto 20 times each. The average use, allowing for breakage, ranged between 8-12 times. The dialyzers are re-used on the same patient.
2. The introduction of Continuous Ambulatory Peritoneal Dialysis (CAPD) as a long-term method of dialysis. This form of dialysis, which entails the introduction of peritoneal dialysis fluid into the peritoneal cavity and changing it 3 to 4 times daily every day, can only be done at home, thus freeing medical personnel and dispensing with the need to purchase and maintain artificial kidney machines.
3. The adoption of a special amendment in the legal status of post-mortem examinations and the removal of organs from cadavers, early in 1981.

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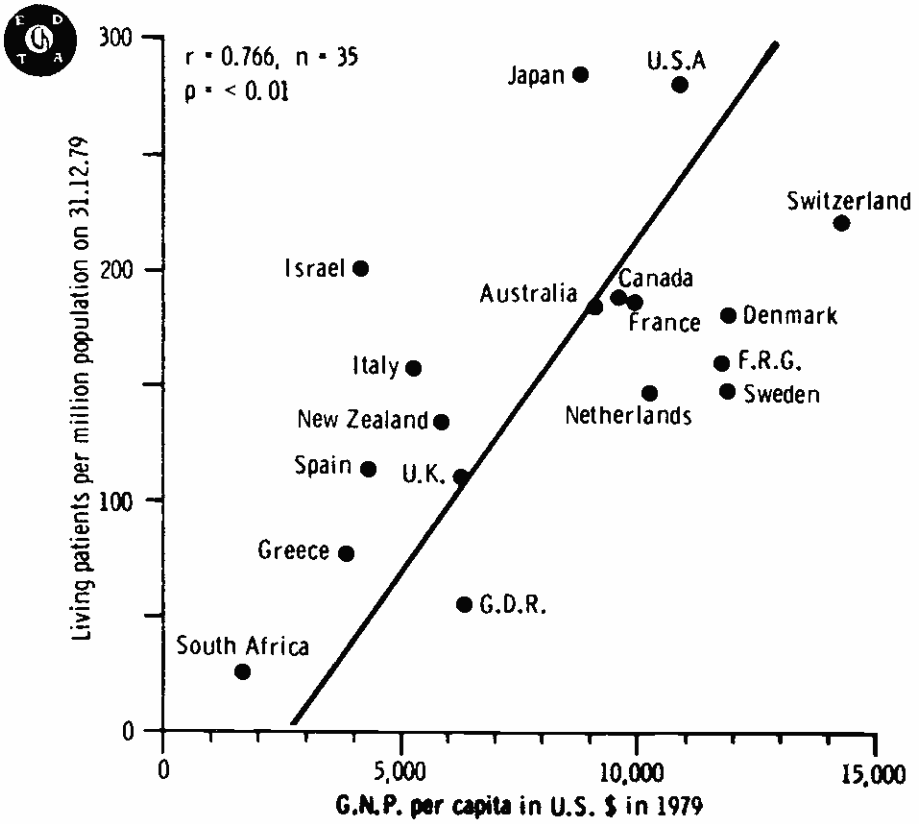

Fig 1 Correlation between number of patients alive on treatment for End Stage Renal Failure and per capita Gross National Product. Taken from: Proceedings of The European Dialysis and Transplant Association. Volume 18.

The re-use of hollow fiber dialyzers has become an accepted procedure in many centers, since it was found safe. When properly rinsed the loss of dialysis efficiency was found to be minimal. This washing procedure can be done by a specially designed machine or simply by passing the fluids by gravity, keeping the containers on a high shelf.

CAPD was introduced in Israel in 1978 and at present 7 per cent of dialysis patients are using this method. Intermittent peritoneal dialysis i.e. about 8 exchanges each time performed 3 times weekly is also used for non-hypercatabolic cases, especially in elderly patients. This method is used in Israel in about 5 per cent of the patients on dialysis.

The methods of dialysis in Israel in December 1981 were as follows:

	Number of patients	Per cent of total
Total	793	100
In-Center hemodialysis	594	75
Home hemodialysis	67	8.5
Community center hemodialysis	39	4.9
CAPD	54	6.8
IPD	39	4.9

In February 1982 the number of patients on CAPD was 54 out of 827 patients on all forms of dialysis i.e. 7%.

In our hospital, the Chaim Sheba Medical Center, we were able to cope with the increasing demand for dialysis space by increasing peritoneal dialysis to 25% in March 1982 as follows:

	Number of patients	Per cent of total
Hemodialysis	57	75%
Peritoneal dialysis:		
IPD	9	12%
CAPD	10	13%

In June 1982 this figure reached 16 i.e. 20% for CAPD and 4, i.e. 5% for IPD. Like others we have had numerous peritoneal infection episodes at the initiation of CAPD. With the development of better aseptic techniques, which should be taken very seriously down to the minutest detail, we were able to decrease the episodes of peritonitis and to minimize its effect on the patient in two ways: 1. Early diagnosis and treatment make these episodes mild and easily curable without the need of hospitalization, 2. Aseptic techniques of nurse and patients decreased these episodes from 1 per 6 to 8 weeks to 1 in 20 to 22 weeks. These made CAPD tolerable, especially when considered with the special advantages it offers, like the higher hemoglobin levels and the ability, or even necessity, to eat protein freely.

Other countries which have adopted CAPD include the United Kingdom, France, and Switzerland, where about 5 to 6 percent of dialysis patients were on CAPD already last year, according to the European Dialysis and Transplant Association Registry.

However, the treatment of end-stage kidney failure is not complete without transplantation. Actually, dialysis and transplantation are complementary forms of therapy for the same disease condition. Since the risk of mortality has decreased to very small proportions in transplantation, it became almost mandatory for every patient on dialysis to attempt transplantation. Success frees him from the tedious dialysis and offers him a life of better quality. Failure brings him back to his familiar dialysis. Certain countries have succeeded in giving a high percentage of transplantation. For example, in 1980, 44 per cent of living patients with end-stage kidney failure in the United Kingdom, have a functioning kidney graft. In Denmark this figure reached 46.6% (1). The European Dialysis and Transplant Association registry reports this figure to be 18.38% in 1980 for all

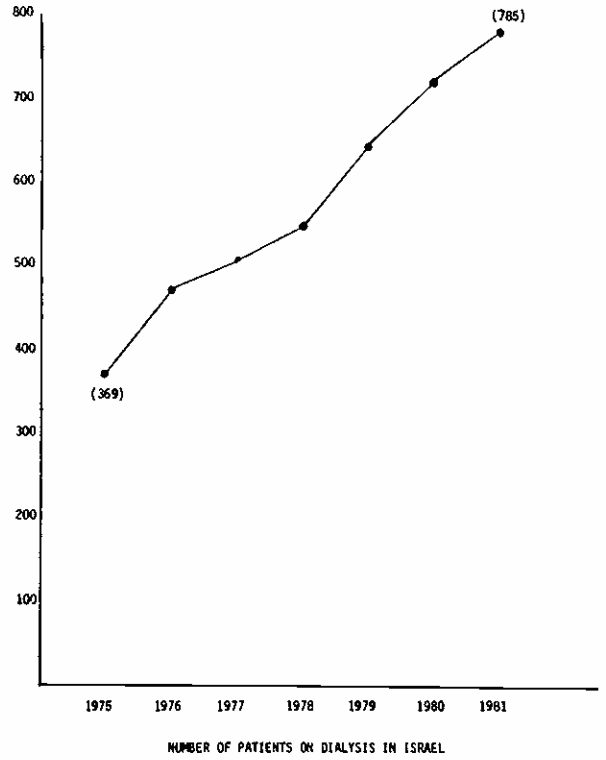

Fig 2 Dialysis in Israel.

the registered countries. In Israel this figure is only 15% and is steadily rising. Living donor transplants have a special moral problem and according to many, it is suitable mostly for patients who are unable to obtain a cadaveric kidney. Cadaveric kidneys are not always available because custom and often religion prohibit post-mortem dissection of the body. The families somehow resent their removal despite the knowledge that the kidneys of the dead person are going to disintegrate in the grave within a short time or be burned by cremation.

In Israel, there are strong feelings against post-mortem dissection of the body. The religious groups sometimes keep watch over dying patients so that they will not be taken after death inadvertantly for post-mortem examination. Despite this, due to very intensive efforts and lobbying, the Israel Medical Society managed to influence the legislators in the Kenesseth (Parliament) to introduce some amendments in the law, enabling us to obtain kidneys for transplantation more easily. The amendment to the post-mortem Act in Israel (1981) includes the following statements:

A post mortem operation cannot be performed until 5 hours after notification has been given to members of the family.

If it is necessary to use part of the corpse in order to cure another person, notification of this operation should be given to a member of the family. This notification should be given a reasonable amount of time before performing the operation.

If there is a need to use part of the corpse to save someone's life, the minimum time of notification will be that in which the said organ can be removed, and will still be suitable for use.

If notification to the family proves impossible the organ can be removed provided that a reasonable attempt has been made to give such notification.

Corneal, skin and kidney transplants are considered as life saving procedures.

No post mortem operation can be performed if a family member objects or if there is written objection by the deceased.

If a person has given prior consent to a post mortem operation, it can be carried out despite the objection of the family.

As you can see, whereas the laws for post-mortem operation require active consent by the family, in contrast the legislators have amended the law to allow removal of the kidneys unless there is active objection.

Since the enactment of this law, cadaveric kidney transplantation, which was performed on about 40 patients in 1980 increased to 123 in fifteen months i.e. about 100 a year. This is for all the country, with a population of about 4 million. This means that at present we have 25 transplants/million/year in contrast with 10/million/year in 1980. The five year survival of patients who have undergone transplantation in Israel was 80% for the ages 15-34 years and 60% 55-64 years. These figures show that it is relatively safe to undergo a transplant procedure because of the low mortality rate.

However it must be remembered that transplantation cannot solve the whole problem of dialysis. In the 123 transplants performed in Israel between January 1 1981 and April 1 1982, 38 (31%) returned to dialysis, 7 within the first month, 17 after one month, 4 after 2 months, 4 after 3 months, 2 after 4 months, 2 after 5 months, 1 after 7 months and 1 after 11 months. 14 died (11.4%) during this period leaving only 57.6% with a functioning graft.

In summary, a certain amount of change in legislation was necessary to make organ removal for transplantation easier for the doctors and for the family of the deceased. Nevertheless complete freedom to refuse was ensured by the legislator. During the period required to change public opinion in favour of organ removal for transplantation, other steps have to be taken to ensure treatment to all those who need it. This is done by re-use of dialysers to increase dialysis without burdening the budget, and to introduce CAPD as a practical form of home dialysis without machines.

The public should be enlightened to the fact that despite a tragic death there is nothing more noble than giving consent to transplant kidneys which would otherwise disintegrate with the body.

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