

Integration of PD in Uremic Treatment

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Over the past twenty years population of patients having access to dialysis has increased rapidly in most developed and developing countries. Peritoneal dialysis (PD) and hemodialysis (HD) are not studied as separate, independent procedures, but are considered parts of a unique chain in treatment of patients with end stage renal disease (ESRD). When both dialytic modalities (HD and PD) are equally available for treatment of ESRD patient, the selection of patients for particular mode of dialysis treatment should be based on individual, medical, social and psychological criteria as well as on patient's preference.

The technique of continuous ambulatory peritoneal dialysis (CAPD) was first described as therapy for end stage renal disease (ESRD) some twenty years ago. A very large number of patients throughout the world have had successful PD therapy. There are about 105 000 live patients worldwide on this treatment, representing some 15% of the global dialysis population (1). PD is a valuable method of dialysis. During the period spent on this program patients can stay at home and attend to their usual habits, having similar or even better quality of life than on HD and the same survival rate as HD patients (2).

A number of factors are considered when choosing PD treatment:

- Medical factors
 - Cardiovascular instability
 - Availability of vascular access
 - Age
 - Diabetes
- Psychosocial factors
 - Educational deficits
 - Time of referral
 - Patients preference
- Economic factors
 - Health care system
 - Physician facility/ reimbursement

Due to the effects of these factors the use of PD may differ from country to country or even in parts of the same country. In some countries where the annual health care budget is fixed or low, PD is often prescribed because of its lower cost(3). On the other hand, in some countries (e.g. Serbia) PD is more expensive than HD and therefore the percentage of patients treated with this modality is lower (3%) (4). Physician reimbursement and interests are significantly influenced by the health care system and this has been identified

as the most important factor influencing the choice of PD by some (5).

Education of patient is dependent on physician bias, and in non urgent situations the decision of patients depend mostly on the information provided by their doctors (5, 6). In the Dialysis Morbidity and Mortality Study (DMMS), only 25% of the patients who chose HD reported that PD was discussed with them, whereas 68% of the patients who chose PD reported that HD was discussed with them (7). Another factor that influences whether or not a patient is treated by PD is the time of referral. Patients referred to a renal unit early in their disease are more likely to choose PD. Patients who are referred late are more likely to be initiated on HD and stay on it (6, 8).

If all the psychosocial factors are eliminated we couldn't forget the patient factors. These are: their psychological profile, family environment, type of housing, distance from the HD unit, and the desire to be independent and/or continue working (5).

PD is a dialysis modality of choice in children. However, medical reasons play a role in the selection of the dialysis modality in only a minority of adult patients. In some centres, only 15% were referred to one of the two modalities for medical reasons (inability to obtain a vascular access and cardiovascular instability). It is common opinion that PD is the best method for treating patients with diabetes (9), but current evidence does not support its preferential use in these patients (10).

Over the last two decades PD, or CAPD, has become a popular modality of renal replacement therapy. Its continual efficiency is comparable with HD, and in some cases it is even superior. CAPD is an extremely simple technique when compared to HD.

Table 1. Relative contraindications to CAPD

·	Pleuroperitoneal leak
·	Hernia
·	Low-back problem
·	Colostomy, nephrostomy
·	Polycystic kidneys
·	Obesitas, hyperlipidaemia
·	Blindness, amputations
·	Poor motivation, overt psychosis

Management of CAPD program, however, is more complicated. It is very important to motivate nephrologists, surgeons, nurses, social workers and other healthcare workers

involved in treatment of patients. For optimal decision-making adequate patient education is essential.

There are no strong medical or social contraindications for CAPD in about 80% of patients. Relative contraindications could be recent abdominal surgery, especially with drainage, peritonitis, paralytic ileus and implantation of an artificial abdominal aorta.

Possible advantages of PD

In uraemic patients, PD should substitute for at least two renal functions: clearance of degradation products accumulated in the blood (i.e. clearance of solutes) and removal of excess water (ultrafiltration).

Possible medical advantages to be gained from using PD are as follows:

- It is well recognized that residual renal function (RRF) is better preserved by PD than HD (11). RRF is of considerable benefit to the dialysis patient. It makes a significant contribution to total clearance and to the maintenance of fluid balance. It is also interesting to note that one report suggested that RRF is longer preserved on CAPD than on automated peritoneal dialysis (APD) (11)

- It has been suggested that PD patients may have better cognitive function than those receiving HD. PD patients have a higher hemoglobin concentration, and it has been shown that patients without anemia or those treated with recombinant human erythropoietin have better cognitive function (12).

- For many patients the ultimate goal is a successful transplantation. Some authors have recently suggested that PD patients may have better outcomes in the first week after cadaveric transplantation than HD patients (13). They speculated that it might be due to greater antigenic stimulation during HD. It is possible that the relative improvement of RRF in PD makes it easier to perform the uretero-vesical anastomosis, reducing the chances of leaks and other similar complications.

- Since PD is a home based therapy there is considerably less risk of acquiring a blood borne virus such as hepatitis C.

Quality of life

PD gives an equally good or even better quality of life than HD. The most obvious advantage of PD is the fact that it is a home-based treatment saving patients' time and inconvenience of repeated visits to the dialysis unit. PD provides better quality of life than in-centre HD especially because it preserves better working ability, daily functioning and wound healing (13). Holidays and traveling are more flexible. PD enables patients to preserve their employment and daily activities. CAPD potentially allows the patients to have more control over their own lives and should provide more chance of rehabilitation. Still, the most important factor determining the quality of life of these patients is their baseline health condition at the onset of the treatment, such as existence of diabetes mellitus, cardiovascular instability or systemic diseases (14).

Elderly patients (over 65 years of age) are often referred to PD and they exhibit quite satisfactory quality of life on this treatment (15).

Factors influencing the choice of PD: There are many medical reasons for recommending either HD or PD. For some individuals PD is clearly preferred. These include those with problems with vascular access, small children, persons living far away from the dialysis center, those with complications from HD, and those with a strong desire for independence and autonomy. It can also be recommended to patients who have not a live-related kidney transplant donor. Another factor that influences whether or not a patient is treated by PD is the time of referral. Patients referred early in their disease to a renal unit are more likely to choose PD.

Conclusion

It can be concluded that PD is as good, if not even better modality as HD as an initial form of RRT and is acceptable to many patients. Reviewing the literature the conclusion can be drawn that if medically suitable, PD should be the first option for RRT. The benefits as noted previously include good preservation of RRF, better early survival rate, reduced risk of infections by a blood borne virus and better short-term results with a transplantation.

It is very important that: 1) patients have a free choice, assuming the appropriate resources are available; and that 2) physicians should present all three types of RRTs - PD, HD, transplantation (it is likely that each form of therapy may have a role to play during the lifetime of patients with renal failure). During the first two years of RRT there is no difference in mortality comparing PD to HD, but subsequently it is increased in PD patients (17).

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