SHOULD OLDER PATIENTS BE OFFERED PERITONEAL DIALYSIS?

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On haemodialysis, my life was not my own — handing control to nursing staff for 4 hours, 3 days a week, surrounded by noisy machines and unhappy patients, returning home after 11 hours, too exhausted to eat and falling into bed. However, peritoneal dialysis has given me back my life. I am in control of me and am treated like a human being, not just a patient. There are minor drawbacks, such as storage for the fluids and being unable to have a bath, but it is a small price to pay.

Chronic kidney disease (CKD) is predominantly a disease of the elderly, with a prevalence of CKD stage III – V of 25% in the general population over the age of 70 years and 30% over the age of 80 years compared to 11% overall (1). An even higher prevalence of 80% for CKD III – V has been suggested for residential-care populations, which presumably have a greater burden of comorbidities (2). Although only a small proportion of individuals with CKD will progress to end-stage kidney disease (ESKD), increasing life expectancy means that the number of older people with ESKD is going to escalate. Although the UK Renal Registry shows that the median age of patients starting dialysis has been fairly stable at around 65 years over the past few years (3), the number of “old elderly” patients is increasing. In the USA, the number of octogenarians and nonagenarians starting dialysis increased from 7054 persons in 2003; after allowing for population growth, this represents a 57% increase in the rate of starting dialysis in this age group (4). In France in 2005, almost 40% of patients starting dialysis were over the age of 75 years (5). Thus the elderly are the largest and fastest growing group of patients on dialysis, but they are still less likely to be started on peritoneal dialysis (PD). In the United Kingdom, when analyzing modality by age <65 and ≥65 years, 30% and 17% of incident patients respectively were on PD at day 90 in 2006 (3). The general decline in utilization of PD (6) also impacts on the low percentage of older patients being offered PD in the UK: in 2002, 42% and 21% patients <65 and ≥65 years started PD (7). In Canada during 2002 – 2003, only 12% of patients over the age of 75 years started on PD (8). In contrast, in France, where assisted PD using community nurses has been available for many years, PD is predominantly a treatment of the elderly, with 54% of males and 59% of females on PD in January 2006 being over 70 years of age (9). The elderly are also successfully dialyzed on PD in Hong Kong, which has a PD-first policy: in March 2007, 80% of patients with a median age of 62.3 years were on PD (10).

One must therefore ask whether, in many countries, older patients are being denied a treatment choice from which they may benefit. To answer this question, it is necessary to consider reasons why they may benefit from PD and discuss the barriers to PD in this age group and how they can be overcome.

CHOOSING DIALYSIS MODALITY FOR OLDER PATIENTS

Older patients with ESKD have a much greater disease burden than younger patients. This is due not only to the
vascular disease associated with their renal disease, but also the comorbidity found in many older people, including impaired vision, deafness, poor mobility, arthritis, and cognitive problems. They are often socially isolated, live in poor accommodations, have financial problems, and can be psychologically depressed due to loss of independence or bereavement. All these factors are problematic for any dialysis modality and are often regarded as contraindications for PD. In a recent study of 134 older incident Canadian patients with a median age of 73 years, 25% had visual problems, 20% were considered immobile, and 17% had reduced hearing (11). Despite these barriers, over 40% of these patients were commenced on PD.

For hemodialysis (HD), vascular disease results in a high risk of failure of vascular access. This results in increased reliance on venous access, with all the associated risks of infection and venous thrombosis. Failure of vascular access can necessitate frequent hospital admissions for unpleasant and painful radiological and surgical procedures. Cardiac disease in these patients can also cause hypotension and arrhythmias while on HD. Older patients often, therefore, feel “washed out” after a dialysis. Added to this is the need for patients to travel to and from the dialysis unit; many cannot do this independently and require transport provided by the hospital. Not only may some have to travel long distances, but frequently there are long waits for transport, which is often at antisocial times of day.

Peritoneal dialysis has the advantage that it is done in the home, thereby avoiding the need for transport. This is an advantage for both the fit and the more frail elderly. For the fit elderly, it means that they can travel, have an active social life, and enjoy their retirement. The more frail elderly will also benefit as they will not have the swings of HD and the need for travel to the HD unit will be avoided. The problem is to determine whether such individuals can cope with the rigors of a home treatment. Such decisions are often made by healthcare professionals without full discussion with the patient. Many older patients can be trained to do their own PD, although this may take longer than with younger patients. Family members are often willing to help with all or part of the procedure and, increasingly, use of community nurses enables frail patients to be on PD in their own homes.

OUTCOMES OF HD VERSUS PD IN THE ELDERLY

Most reports of outcomes of dialysis in the elderly are retrospective, use varying definitions of elderly, and are based on either PD or HD populations without comparing the outcomes of the two modalities. The North Thames Dialysis Study (NTDS) (12) is the only large prospective study determining outcomes and quality of life on both HD and PD for older people. For this study, “elderly” was defined as age 70 years or older when starting dialysis. All eligible patients were included from four renal units. Survival was assessed in the 125 patients (age 70 – 86 years) that commenced dialysis during the recruitment period (May 1995 – December 1996). Disease burden (hospitalization, quality of life, costs) was studied in 174 prevalent patients (age 70 – 93 years) that had been on dialysis for 90 days (including stock patients and patients starting dialysis during the recruitment period). One-year survival rate was 71% overall. Cox regression analyses showed that mortality was significantly associated with age 80 years and older [relative risk (RR) 2.79, 95% confidence interval (CI) 1.28 – 6.93] and peripheral vascular disease (RR 2.83, 95% CI 1.29 – 6.17) but, significantly, not with other comorbidities or dialysis modality. The high number of patients on PD in the prevalent group (76, i.e. 44%) provided an opportunity to compare the outcomes of PD to HD (13). At study entry, there were no statistically significant differences between PD and HD patients in sociodemographic characteristics or comorbidity. Forty patients (23%) died during the 12-month follow-up period (18 PD, 22 HD). Univariate analyses showed no significant effect of modality on survival and this finding was confirmed in regression models. Twenty-four (32%) PD and 32 (34%) HD patients had no hospital admissions. Hospitalization rates for PD and HD were 1.9 and 2.0 admissions/patient-year.

The striking feature of the patients studied in the NTDS is the high proportion on PD, which reflected UK practice at the time of the actual study (late 1990s). Many of these patients would not be offered PD today in the UK, even though the results showed that outcome and quality of life were not different for patients on HD versus PD. The only registry data comparing outcomes on HD versus PD in the elderly come from a recent analysis of data from the French REIN Registry (14), which looked at 2-year survival in 3512 patients over the age of 75 years starting dialysis between 2002 and 2005. Overall, 18% began with PD, 50% with planned HD, and 32% with unplanned HD, although the proportion starting PD varied from 3% to 38%, depending on region. Interestingly, compared to UK practice, starting dialysis with PD was significantly associated with older age, congestive heart failure, and severe behavioral disorders. Two-year survival among those that started with PD was 64% and was not different from all of those that started HD. The mortality risks, though, of the unplanned HD patients and PD patients were 50% and 30% greater compared to the planned HD group. The number of PD
patients that presented unplanned is not known. Although these data would suggest that mortality on PD is worse than for planned HD, the authors do acknowledge that this may be counterbalanced by the advantage of enabling elderly patients to be treated at home and cite the evidence of better quality of life of elderly French patients on PD, many of whom would be receiving community assistance (15).

**CLINICAL OUTCOMES OF PD IN THE ELDERLY**

Two-year and 5-year patient survivals of 88.3% and 56.4% respectively have been reported for patients over 65 years old on continuous ambulatory peritoneal dialysis (CAPD) in Hong Kong (16). In a review of my own unit practice in 2002, 1-year and 4-year survivals for patients over 65 years old on CAPD and automated peritoneal dialysis (APD) were 94% and 63% (personal observations); this compared to data in the UK Renal Registry report for 2003 showing survival for all patients over 65 on dialysis (HD and PD) of 69% at 1 year and 33% at 4 years (6). As well as considering overall survival, it is important to determine whether there are any specific problems with PD in the elderly compared to younger patients.

De Vecchi et al. (17) compared the outcomes of nondiabetic patients treated with CAPD for patients aged over 70 years (63 consecutive patients) with patients aged 40–60 years (86 patients) over the same time period. Two-year patient survival was in fact lower in the older group (68% vs 82%, \( p < 0.001 \)), but 2-year technique survival was identical (86% and 88%) in the two groups. Peritonitis rates were higher in the older group (0.52 vs 0.37/ patient-year, \( p < 0.002 \)), although there was no significant difference in the numbers of leaks or hernias.

To evaluate the effectiveness of APD in the elderly, Kadambi et al. (18) compared the outcomes of three groups of patients of different ages (<50 years, 50–64 years, and >65 years), over 90% of whom were on APD. This was a large retrospective study of 493 patients, with 192 in the over 65-year age group. While this group had a higher mortality rate than younger patients, it was found that technique failure rates and overall peritonitis rates were not different than those for younger patients, although older patients did have higher gram-negative peritonitis rates.

**QUALITY OF LIFE ON PD**

Many patients starting on dialysis have a poor life expectancy. UK Renal Registry data show that median survival for patients starting dialysis over the age of 75 years is only 2 years, and 3 years for those between 65 and 74 years (3). Similar survival is reported in the French REIN Registry (14): overall 2-year survival for patients over 75 years old was 52.7%. This is considerably lower than that of the general population of the same age, and is not surprising given the many comorbidities of patients with ESKD. It is particularly important to minimize the symptom burden and to optimize the quality of life for such patients. The lifestyle of fitter patients also needs to be considered when enabling dialysis choice; many have commitments to care for family members, including spouses and grandchildren, and many would like freedom for hobbies and travel. There are, however, remarkably few studies specifically examining the quality of life of older patients on dialysis.

Quality of life was measured in the NTDS (12) using the SF-36 and Kidney Disease Quality of Life Questionnaire (KDQOL). The mental quality-of-life scores (SF-36) were not significantly different from those of elderly people in the general elderly UK or USA populations. Mean physical quality-of-life scores (34.0 in new patients and 33.2 in stock patients) were lower than in the general population of elderly people aged 70 years or over in the UK, but not significantly different from the mean scores for those 75 years or over in the USA. There was no difference in SF-36 scores (physical and mental) between the PD and HD cohorts, but the KDQOL symptom score was higher (which means fewer symptoms) in the PD group (13).

**ASSISTED PD**

Enabling frail elderly French patients to have PD at home by providing community support has already been described. The NECOSAD study showed that, although 50% of patients given a choice will choose PD, patients that were 70 years or older were 6 times more likely to choose HD than those aged 18–40 years (19). There can be many reasons for this, but contributing factors must include fear of being unable to learn a new technique, anxiety about doing a home treatment on one’s own, and being unable to learn or perform PD because of physical or cognitive problems. Providing community-based carers can enable patients to have PD at home, even when they are unable to do it themselves and have no family support to help them. The study by Oliver et al., in Ontario (11), suggests that more patients will choose PD if community assistance is available. In France, this has been standard treatment for older patients for many years. Of 11744 French PD patients treated in the past decade (1995–2006), 56% were considered unable to perform their own treatment and needing assistance. This was provided by a community nurse for 86% of pa-
patients (9). Different models of delivering and funding assisted PD have been developed in various European countries (20). In France, nondisconnect CAPD with UV Flash (Baxter SAS, Maurepas, France) is the predominant method used. In other countries, APD is used as the PD modality for assisted patients. Reported 2-year survival on assisted APD of around 48% makes this a feasible dialysis modality for frail elderly patients (21).

LATE REFERRAL

Late referral to a nephrologist, and therefore lack of predialysis care and education, are well known to influence choice of dialysis modality toward HD (22,23). So-called “crash landers” are started on HD, usually with no choice, and then commonly remain on HD with little educational input regarding possible options. Older patients with higher comorbidity are more likely to present late and are therefore never considered for PD or given the education to enable them to choose PD (24). An analysis of late referral in the 2007 UK Renal Registry report (3) not only confirms that patients that are referred late are older, but also shows that the median duration of predialysis care reduces progressively with age, from just under 20 months in the 45- to 54-year-old group to around 11 months in the 75- to 84-year-old group. When considering all age groups, 19% of the late referral group were on PD at day 90 compared to 32% of the group referred earlier.

OVERCOMING THE BARRIERS

Older patients requiring dialysis should be able to choose their dialysis modality, whether this should be hospital- or home-based, and any medical contraindication to a particular modality should be discussed. The information given should be nonbiased and give the pros and cons for both HD and PD relevant to their age and comorbidities. Unfortunately, this is remarkably difficult to do because of the paucity of studies on quality of life and outcomes for older patients on HD and PD.

The process of education also needs to be tailored for older people. Most education occurs during the predialysis phase, when mild cognitive impairment and uremia make it difficult for patients to understand the implications of information; those presenting late never receive this information at all. It may be appropriate to offer choice of modality 2–3 months after starting dialysis, once patients know more about the ups and downs of life on dialysis.

There is, of course, little reason why late presenters should be started exclusively on HD. Some older nephrologists will remember the past use of PD as an acute dialysis modality. This went out of favor with the advent of central venous catheters and therefore the ability to start HD easily. With easy insertion of PD catheters, late presenters could similarly start on PD, on which they would then be much more likely to remain (25).

CONCLUSION

The ability of older patients to use PD as their dialysis modality should not be determined by whether they live in an area where the nephrologist is a PD enthusiast. Patients have the right to receive appropriate nonbiased information so they can choose the dialysis modality that gives them the best quality of life and suits their and their family’s lifestyle. Furthermore, the option of PD for the elderly needs to be reconsidered in light of the ever increasing number of older people requiring dialysis, as placing the majority on HD will be a huge financial burden for any healthcare system. The French experience of community-based PD shows that this can be achieved. Increasing evidence of better quality of life for many elderly patients on PD, and increasing awareness of the need for a humane approach to the frail elderly patient with multiple comorbidities and poor life expectancy, should persuade more renal teams that PD at home is often an optimal and appropriate method of management.

REFERENCES


