

Developing an assisted automated peritoneal dialysis (aAPD) service—a single-centre experience

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Abstract

There is an ongoing increase in the number of elderly or frail patients requiring renal replacement therapy. Assisted automated peritoneal dialysis (aAPD) is one treatment option for this patient group and is becoming increasingly recognized as a distinct dialysis modality. In this article, we review the current status of aAPD and its evolution across Europe, describing the differences in service provision. We also report our experience locally of outcomes on our aAPD population over the last 4 years. We found that aAPD is a viable dialysis modality in the frail and elderly with limited lifespan, and complications of peritoneal dialysis are perhaps lower than would be expected in this population. This form of therapy also avoids the disruption to life which results from hospital-based dialysis.

Keywords: assisted APD; CAPD; peritoneal dialysis

Introduction

Although patients have been receiving assistance one way or another for as long as peritoneal dialysis (PD) has been in existence, assisted automated peritoneal dialysis (aAPD) is becoming increasingly recognized as a distinct dialysis modality. Assistance may be provided by trained members of the family, paid nurses or health care professionals, depending on the set-up of the health care system. Often, members of staff at intermediate care facilities, residential homes and nursing homes are trained to carry out PD for their residents.

Falling numbers of patients on PD in the developed world over the past decade have been attributed to several factors including the advancing age of the incident dialysis population and increasing co-morbidities and complex social circumstances at commencement of dialysis [1]. To some extent, it is likely that the expansion of haemodialysis (HD) facilities and the economic pressures to keep units functioning at capacity, along with a rise in living transplant donors has also contributed. Other factors may include physician bias and a lack of exposure to the technique during specialist training and absence of active PD programmes in some renal units. In a tertiary referral centre for encapsulat-

ing peritoneal sclerosis (EPS) surgery such as ours, there is a disproportionately high exposure of the multidisciplinary renal team to patients with EPS and its sequelae. This may adversely influence recommendation and choice of modality.

Appropriate patients for aAPD

There is a need for assisted PD to be recognized as a specific dialysis modality that serves a special subgroup of patients. This would bring with it the appropriate payment tariffs from the commissioners to run such services. The recent UK ‘Specification for the Commissioning of Peritoneal Dialysis Pathway’ [2] states that assisted PD should:

‘... be readily available to a patient choosing PD whose inability to perform the technique would otherwise require hospital haemodialysis. This to include access to paid carers who are supported and trained regularly.’

The advantages of PD versus HD for the elderly include independence from hospital and slower removal of solute and fluid, which may translate to better cardiovascular stability [3, 4]. Elderly patients on PD compared with HD may be less likely to suffer from malnutrition [5]. Other patient groups who may be suitable for consideration for aAPD include those with physical disabilities (e.g. rheumatoid arthritis), patients requiring terminal care (disseminated malignancy or severe intractable heart failure) and those with learning disability or who are simply slow to learn due to language barriers.

European experience with aAPD

Assisted PD programmes are prevalent in France, Switzerland, Belgium, Denmark, Germany, parts of Spain (the Canary Islands) and the UK. Models vary between countries with France having the most well-established service, in existence since 1977, with a high rate of utilization of PD in the elderly [6, 7].

Verger et al. [8] describe a French cohort of 11 744 incident patients from 1995 onwards. Their median age was 71 years and 22% were >80 years. Fifty-six per cent required

assistance with their PD and in 86% of cases, it was provided by private nurses paid for by the state. In 14%, the assistance was provided by members of the family. Most of these patients were on assisted continuous ambulatory peritoneal dialysis (CAPD) requiring four exchanges daily, which is clearly more labour intensive and therefore expensive than aAPD.

Outcomes in assisted PD

Studies examining outcomes in patients on assisted PD have generally been small and results conflicting. *Lobbedez et al.* [7] report an 83% 1 year survival of assisted PD patients in their centre; however, the survival rate is much lower at 58% in a group of ‘functionally dependent’ patients reported by Povlsen [9]. As patients requiring assisted therapy are a self-selected group, it is difficult to compare the outcomes of this group with others. However, generally, the outcomes of PD versus HD seem similar in the elderly population. The North Thames Dialysis Study Group published survival data on 174 incident dialysis patients aged at least 70 years. There was no significant difference in annual mortality, hospitalization and quality of life scores between patients on HD and PD [10]. Therefore, although there is no evidence to support an argument that PD offers a survival advantage compared with HD for the elderly, it certainly appears to offer comparable outcomes.

aAPD techniques and Manchester experience

In most of the UK, aAPD is provided by health care assistants who receive 3 days training at a Baxter facility followed by a further day’s training in the local PD unit being served. The number of patients receiving aAPD through the Baxter programme has grown steadily to ~125 since its start in July 2007. At Manchester Royal Infirmary, aAPD commenced in November 2007 funded by financial ‘surplus’ from a dwindling PD programme and previously described by Hurst and Manley [11]. Although the service was initially provided by Baxter, in March 2010, our dialysis centre moved to an ‘in-house’ model by appointing ‘health care support workers’ (HCSW) in addition to the pre-existing senior and junior community nurses. The business case was approved on the basis that the appointment of the support workers would reduce costs to the service while continuing to cater for the same number of patients. The role of the HCSW is summarized as:

- Strip-down and set-up cyclor each morning,
- Review/dress patient’s exit site,
- Check blood pressure and weight (blood glucose in diabetics), and
- Communicate with the renal unit regarding regime changes and report any deviations from agreed protocol.

There are two possible models for assistance in this context. In the first, the patient or family member carries out the connections and disconnections and the carer is required to make only one visit a day to remove and replace PD fluid bags and set up the machine. The other model requires two

visits a day (morning and evening) and is for patients who require additional assistance with connections.

Since 2007, 24 patients have received aAPD through our centre. The mean age at commencement of aAPD was 67 years, with 15 of 24 patients being female. The underlying primary renal diagnosis is detailed in Figure 1 and reflects the usual causes for ESRD requiring renal replacement therapy in the general dialysis population.

In most instances, aAPD was provided in the patient’s own home but in 4 of 24 cases, it was provided in a nursing home setting. The reasons cited for requiring assisted dialysis were

- Palliation 2
- Stroke 3
- Frailty 11
- Help for carer 2
- Mental health issues 2
- Not coping 4

Mean Charlson co-morbidity score was 6.8 (predicted annual mortality rate 0.27). Mean duration of therapy was 296 days (range 29–745 days) with six patients converting to HD due to technique failure and eight patients dying on treatment.

Fifteen of 24 patients required hospitalizations at some point during their time on aAPD. Two of these required lengthy admissions of ~200 days due to frailty/mental health issues, the remaining 13 patients had admission lengths of between 1 and 2 months. There has been only one documented episode of PD peritonitis within the service associated with aAPD. Indeed, this was an episode of fungal peritonitis occurring in a patient with multiple co-morbidities, on immunosuppression, during an in-patient stay. This equates to one episode in 237 patient-months of therapy and compares favourably with the current International Society for Peritoneal Dialysis guidelines of a peritonitis rate of no more than 1 in 18 patient-months of therapy [12]. There were three episodes of exit-site infection (1 episode per 79 patient-months of therapy).

Conclusions

In summary, there are increasing numbers of elderly patients requiring dialysis and at present, most of these receive hospital-based HD. This may often involve extensive

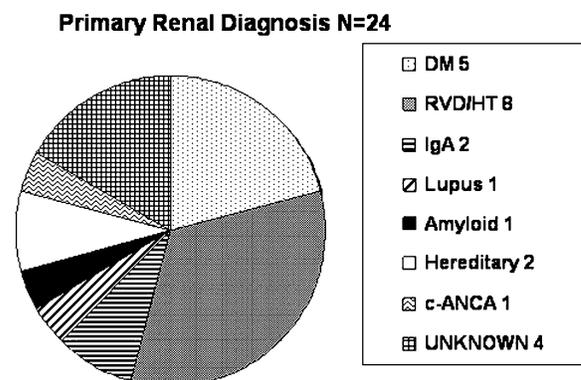


Fig. 1. Primary diagnosis in patients on aAPD.

travelling, waiting time for ambulances and complications of therapy including cardiovascular instability and vascular access problems in addition to serious compromise of quality of life and time spent away from home. There is a growing body of evidence that PD is a suitable modality that provides comparable outcomes for this group, including when it is used within a programme providing assistance for those unable to accomplish independent home therapy. There is a strong argument in this growing era of patient choice that this is a service that should be available and offered to all elderly patients with ESRD where there are no contraindications.

Conflict of interest statement. None declared.

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