Age and Ageing 2005; **34:** 148–152
doi:10.1093/ageing/afi024

Renal replacement therapy in the over-80s

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Abstract

Background: the incidence of chronic renal failure rises dramatically with age, which is no longer seen as a contraindication to treatment.
Aim: to characterise Scottish dialysis patients aged 80 years and over at the time of their first treatment and to compare their outcomes with those of patients with other serious illnesses.
Design and methods: retrospective survey of all older patients starting dialysis in Dumfries and Galloway between 1 January 1994 and 31 December 2003, and of all older chronic renal failure patients starting dialysis in Scotland between 1 January 1994 and 31 December 2001. Comparison with 4,565 Scottish Lung Cancer and 14,398 myocardial infarction (MI) patients of similar age.
Results: 213/3,944 Scottish dialysis patients were aged 80 years or over at the time of their first treatment, representing 5.4% of all new patients and 9.2% of all new starts in 2001. Ninety per cent of older patients received haemodialysis as their first mode of renal replacement therapy. The most common diagnosis was chronic renal failure of unknown cause in 41% of cases. Quality of life, measured in a subset of Dumfries patients, suggested similar social functioning and mental health, but poorer physical health than their younger dialysis counterparts. Early mortality was high in all three diagnostic groups. Median survival from 90 days after the start of treatment, registration or hospital admission was 459 days (95% CI, 375, 543) for the older Scottish CRF patients, compared to 141 days (128, 154) for lung cancer and 1242 days (1192, 1292) for MI patients.
Conclusions: dialysis can be an effective treatment modality for at least a proportion of octogenarians with end-stage renal failure.

Keywords: *renal replacement therapy, chronic kidney failure, dialysis, older people and outcomes, elderly*

Introduction

The take-on rate for dialysis for established renal disease in the UK is currently around 100 per million of the population per year [1, 2]. The increase over previous years is largely because age is no longer seen as a contraindication to dialysis [3]. Half of all new dialysis patients in Scotland are currently over 65 years of age and a significant proportion of these are very old, that is 80 years of age or over at the onset of renal replacement therapy (RRT) [1]. Such trends raise important issues for nephrologists. In particular, do very old patients survive long enough and have a sufficiently good quality of life to justify a treatment as demanding as dialysis?

Patients

We studied all Dumfries and Galloway patients who started short- or long-term dialysis between 1 January 1994 and 31 December 2003. We gathered data from the Scottish Renal Registry on all Scottish chronic renal failure patients aged 80 years or over at the time of their first dialysis between 1 January 1994 and 31 December 2001. Comparisons were made with the survival of 14,398 myocardial infarction (MI) and 4565 lung cancer controls who were aged 80 years or over at admission to hospital or cancer registration, using fully anonymised data provided by the Information and Statistics Division of NHS Scotland.

Methods

Quality of life (QOL) was measured in a Dumfries cohort of regular haemodialysis patients using the SF36 questionnaire: comparisons between older and younger patients were by Mann–Whitney tests. The proportions of older patients starting dialysis in Scotland, their primary renal

diagnosis and first treatment modality were examined using data supplied by the Scottish Renal Registry and displayed graphically using stacked bar charts. The median survival time of the Scottish cohort of older dialysis patients was compared with the MI and lung cancer groups using Kaplan–Meier curves and log rank tests. Adjustment for differences in the age and sex of these three groups was by Cox regression. Initially, survival from first RRT, cancer registration or hospital admission for MI was considered. The analysis was then repeated for survival from 90 days onwards to be absolutely certain that the renal patients had chronic renal failure and also to ensure that any differences between the groups were not overly influenced by early deaths. The study was approved by the Dumfries Research Ethics Committee and the Steering Group of the Scottish Renal Registry, and was conducted without external funding.

Results

A total of 465 patients in Dumfries and Galloway received their first dialysis between 1 January 1994 and 31 December 2003. Sixty-two (13%) were aged 80 years or over at the time of their first treatment. We considered two groups of patients: 22 who dialysed for more than 90 days (long-term dialysis) and 40 who dialysed for less than 90 days (short-term dialysis) [4]. Only one of the 22 long-term dialysis patients recovered renal function after 90 days of treatment, indicating that nearly all of this group had chronic renal failure (CRF). Most of the 40 who dialysed for less than 90 days had acute renal failure [4]. Six patients undergoing long-term dialysis and three patients who had short-term dialysis were still alive at 1 April 2004 (see Appendix 1 available as supplementary data on the journal website www.ageing.oupjournals.org). The 22 Dumfries patients who dialysed for more than 90 days were a subset of all adult CRF patients dialysing in Scotland. A total of 213 of 3,944 chronic renal failure patients having their first dialysis between 1 January 1994 and 31 December 2001 were aged 80 years or over at that time. This represented 5.4% of all incident patients and 47/513 (9.2%) of all new starts in 2001.

Quality of life in Dumfries patients

An assessment of quality of life of hospital haemodialysis patients in Dumfries was undertaken in June 2001. There were 45 hospital haemodialysis patients at that time. Thirty-nine (87%) completed an SF36 Quality of Life questionnaire and six did not. Six of the 39 (15%) completing the SF36 were aged 80 years or over. The responses of these six older patients suggested they had similar social functioning (median score 72 for older vs 89 for younger patients; $P=0.26$ by Mann–Whitney test) and mental health (median score older 92, younger patients 80; $P=0.18$) but poorer physical health than their younger counterparts (median score 25 older, 70 younger patients; $P=0.003$).

Clinical details of older dialysis patients in Scotland

Figure 1 shows an increase in the proportion of older patients starting dialysis in Scotland from 1994 to 2001, and in particular a 4-fold increase in those who were 80 years or over at the time of their first treatment. The majority (90%)

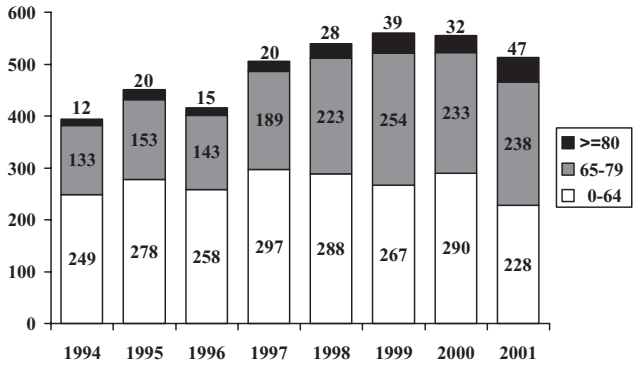

Figure 1. Age at first RRT by year of first treatment.

of these older patients had hospital haemodialysis as their first mode of RRT. None of this older group had a pre-emptive transplant. Only 10% of the older patients started peritoneal dialysis in comparison with 18% of those aged 65–79 years and 32% aged 64 years or less (Appendix 2, available as supplementary data). The cause of the renal failure which led to dialysis at different ages is shown in Appendix 3 (supplementary data). The commonest diagnosis in older patients was chronic renal failure of unknown cause (41%). This is a category used to describe patients in whom primary glomerulonephritis, interstitial nephropathies, multisystem diseases and diabetes have either been excluded or are considered unlikely.

Survival of older dialysis patients and their controls

The survival of the 213 Scottish chronic renal failure patients who were 80 years or over at the time of their first dialysis, together with that of lung cancer and MI comparison patients, is shown in Figure 2. The median survival time from the start of treatment or the time of diagnosis was 328 days (95% CI 228, 428) for CRF patients, 51 days (95% CI

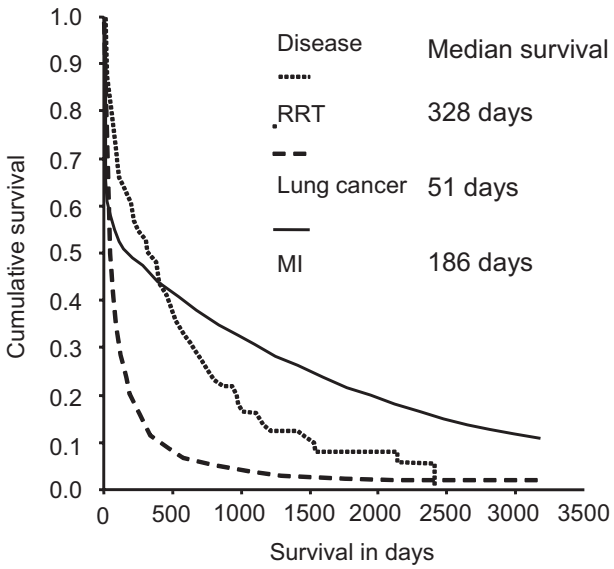

Figure 2. Survival of patients aged 80 or over at start of RRT, cancer diagnosis or hospital admission for MI.

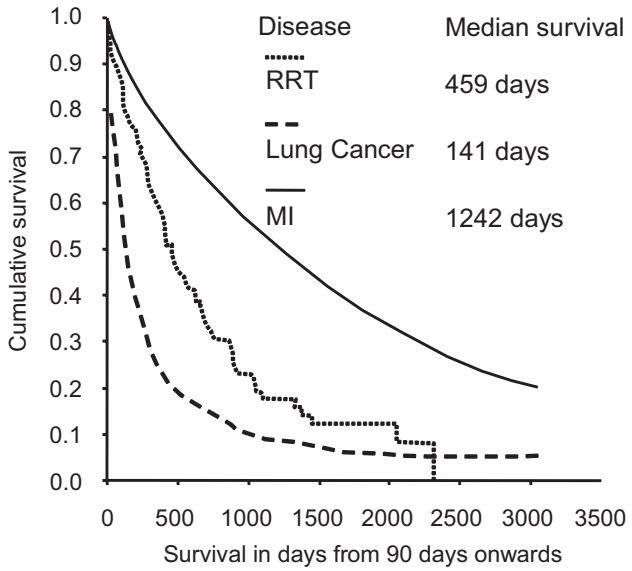

Figure 3. Survival from 90 days of patients aged 80 or over at start of RRT, cancer diagnosis or hospital admission for MI.

48, 54) for lung cancer and 186 days (95% CI 163, 209) for MI. Median survival from 90 days after the start of RRT, cancer registration or hospital admission for MI shows that the renal patients occupy an intermediate position with median survival 459 days (95% CI 375, 543), compared to median survivals for lung cancer and MI patients of 141 days (95% CI 128, 154) and 1,242 days (95% CI 1192, 1292) respectively (Figure 3). The median survival from 90 days onwards is longer in all groups because patients with early deaths are not included. Cox regression for total survival time suggested that risk of death increased by 5% for each additional year of age, that gender was unimportant and that risk of death for renal patients was elevated by 18% and for lung cancer patients by a factor of 2.2 relative to MI patients. The analysis for survival from 90 days onwards suggested a similar risk with increasing age, that the risk for men was higher, and that the risks for renal and lung cancer patients were 2.3 and 4.4 times those of patients admitted with MI. The assumption of proportional hazards required by Cox regression was violated for survival from 90 days onwards because the curves cross. However, this did not alter the inference that after adjustment for age and sex differences, the older renal patients have similar early mortality to older MI patients, but that older patients who survive their MI ultimately have longer median survival than renal patients.

Discussion

Older people present a particular challenge to nephrologists [5, 6]. Age is no longer seen as a contraindication to treatment [3] yet studies show that older age is often associated with a decision to withhold dialysis [7]. Despite these findings, the Scottish Renal Registry Report in 2001 shows that the acceptance rate for dialysis for patients 65 years and over is nearly seven times that of patients under 65 [1]. The number of Scottish CRF patients aged 80 years or over at the time of their first dialysis has increased by a factor of four in the last 7 years, to the point that they now represent 9.2% of all incident patients. Data from Dumfries, one of the Scottish Centres, suggest that this is only part of the story as the number of older patients who start short-term dialysis, most of whom have acute renal failure, is double the number starting long-term dialysis. The workload created by these challenging groups of patients, many of whom have multiple co-morbidities, is considerable and prompts the following two questions: do these older patients survive long enough and have a sufficiently good quality of life to justify this demanding form of treatment?

Our data on quality of life suggest that older dialysis patients have similar social functioning and mental health but poorer physical function than their younger dialysis counterparts, although we would concede that our sample size was too small to exclude small differences with confidence. Other evidence supports the view that older people have similar mental health on dialysis as their peers in the general population who do not have renal failure [8, 9]. In a study comparing quality of life in 221 UK dialysis patients starting dialysis aged 70–93 years with that of UK and US general populations who were not on dialysis but were of similar age, mental quality of life scores were similar but physical quality of life scores were lower in the older dialysis patients [10]. It has been suggested that older people/patients may have fewer unmet aspirations in their lives, which makes them better able to cope with the demanding nature of regular dialysis treatment [11]. Moreover, it has been shown that rehabilitation programmes which include exercise can improve both physical functioning and subjective well-being in older renal patients [12, 13].

Median survival for Scottish patients surviving the first 90 days of dialysis, all of whom had chronic renal failure, was 459 days (just over 15 months). This is less than a median survival of 26 months for renal patients over 80 years of age in Berlin [14] and 28.9 months in Paris [15], but similar to survival of just over 1 year for octogenarians undergoing dialysis in the North Thames Study [10]. Independent predictors of death within 1 year on dialysis in the French study were poor nutritional status, late referral and functional dependence. After 1 year on dialysis, the only independent predictor of death was peripheral vascular disease [15]. Neither gender, treatment method nor co-morbidity other than peripheral vascular disease appeared to influence outcome in either the French [15] or North Thames study [10]. Joly and colleagues [15] also analysed mortality in octogenarians with end-stage renal disease who were treated conservatively and showed poorer outcomes in this group with median survival of only 8.9 months ($P < 0.0001$). Other reports of survival in older people undergoing dialysis have focused on patients less than 80 years of age [16–20] and are not therefore comparable with the results we present in this paper.

We did not look at factors influencing survival in our older Scottish dialysis cohort but we did attempt to place their survival into context by comparing their outcome with age- and sex-matched controls who had significant non-renal co-morbidity. Survival from the start of dialysis,

diagnosis of MI or lung cancer is biased in favour of the renal and MI patients. The renal patients were selected for dialysis, a demanding form of treatment, possibly or presumably because they were considered likely to survive. The MI patients were the ones who did not die instantly or on their way into hospital. Recalculating survival from 90 days partially corrects this bias by focusing on 'survivors' in each of the three groups of patients. The results of this second analysis suggest that older renal patients have poorer long-term outcomes than older MI patients, but that they do better than lung cancer patients at all times. Further comparison with the general population aged 80 years and over shows that all three groups of patients have much poorer life expectancy than their peers. In 2000, the average Scottish man and woman aged 80–85 years could expect a further 6.7 years and 8.4 years of life, respectively [21].

The prevalence of RRT in the UK looks set to increase for several more years. Because CRF is essentially a disease of older age and because age is no longer seen as a contraindication to treatment, it follows that older people are now the fastest growing group of patients starting dialysis. It is therefore unfortunate that expansion of dialysis facilities for older people has not been matched by an increase in services necessary to support them on dialysis. Thus, older patients who are referred by geriatricians to nephrologists and who had previously had access to physiotherapy, occupational therapy and social workers, often find themselves without such services while on RRT. This shortfall in both quantity and quality of care has been recognised [22, 23] but not yet adequately addressed.

From our results and those of other centres, it is clear that dialysis in older people carries a high mortality, especially when co-morbid conditions exist. We have shown nevertheless that survival with a reasonable quality of life may be possible in a proportion of these patients, and thus that dialysis can be an effective treatment modality in octogenerians. This is not to say that all 80-year-old patients with end-stage renal disease should automatically be offered dialysis, which will often be inappropriate because of functional impairment [24] or will become inappropriate in a setting of severe dementia, advanced cancer or other serious co-morbid illnesses [25]. Many questions about the management of older people with end-stage renal disease remain unanswered. Well-designed prospective studies on larger series of patients are required [26].

Key points

- Age is no longer seen as a contraindication to dialysis.
- The number of Scottish CRF patients aged 80 years or over at the time of their first dialysis has increased 4-fold in the last 7 years.
- Quality of life data suggest that older dialysis patients have similar social functioning and mental health but poorer physical function than younger dialysis patients.
- Median survival of patients aged 80 years and over was 459 days (from 90 days after the start of dialysis).
- Survival was better than for lung cancer but poorer than for MI when compared to men and women of similar age.

Acknowledgements

We should like to thank Mrs Laura Kinnear of ISD Scotland who extracted the data for the acute MI and lung cancer comparisons, and Drs Iain Henderson, Alison Severn, Alison Almond, Sue Robertson and Brian Junor for their comments during the preparation of the manuscript.

Conflict of interest statement

All authors declare that there are no conflicts of interest in connection with this article.

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Received 29 June 2004; accepted in revised form 10 November 2004

Age and Ageing 2005; **34:** 152–156
doi:10.1093/ageing/afi031

An educational intervention can prevent delirium on acute medical wards

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Abstract

Background: delirium is a common disorder in hospitalised older people and established cases may have a poor outcome that is not readily improved by intervention. Prevention of cases through education of medical and nursing staff has not been fully studied.
Objectives: to test the hypothesis that an educational package for medical and nursing staff would both reduce the number of incident cases of delirium and increase recognition of cases of delirium within an acute medical admissions ward.
Design: single-blind case–control study.
Setting: two acute admissions wards in a busy inner-city teaching hospital.
Subjects: 250 acute admissions over the age of 70 years.
Methods: an educational package for staff on one ward consisting of a 1 hour formal presentation and group discussion, written management guidelines and follow-up sessions. The follow-up sessions, which were based on one-to-one and group discussions, aimed at providing continuous support of staff through emphasising learning and testing knowledge. Diagnosis and management of some discharged delirium patients were also discussed to allow staff to learn from previous experience. The main outcome measures are point prevalence of delirium established by researchers, and recognition and case-note documentation of delirium by clinical staff.
Results: the point prevalence of delirium was significantly reduced on the intervention compared to the control ward (9.8% versus 19.5%, $P < 0.05$) and clinical staff recognised significantly more delirium cases that had been detected by research staff on the ward where the educational package had been delivered.