Chapter 1
ESRD in the Elderly: The Scope of the Problem

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Introduction

The elderly (age >65 years) and the very elderly patients (age >75 years) constitute the fastest growing segment of patients starting dialysis. One out of every four patients starting dialysis in the USA is above the age of 75 years. There has been a huge increase in octogenarians and nonagenarians starting dialysis. Maintenance hemodialysis (HD) is often the initial dialysis modality of such patients with multiple comorbidities.

Initiating dialysis in the elderly is often fraught with multiple issues that may impact the ultimate outcome. These issues relate to awareness as well as preferences of elderly patients regarding options for renal replacement therapy (RRT), psychosocial circumstances, general frailty, comorbid load, and lack of clarity about goals of therapy (prolonging survival and/or improvement in quality of life – QOL). Palliative care and end-of-life decision making also form a major dimension of the decision-making process.

Thus, a burgeoning elderly dialysis population with its attendant comorbidities and rising costs is a major problem. This is compounded by inadequately trained nephrologists in certain basic aspects of geriatrics, making this issue even more complicated.

Dialysis decision making in the elderly is a complex process. It includes decisions involving the transition to dialysis, the pros and cons of dialysis versus no dialysis (conservative care), palliative care, as well as delineating the relative importance of survival versus quality of life (QOL). This chapter will outline the scope and magnitude of the problems faced while dialyzing the elderly population.

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The Steadily Rising Elderly Dialysis Population

More than 400 people per million start dialysis each year in the USA. Of these, a third (or more) are 65 years or older and account for about 42 % of costs of dialysis care in the USA. The mean age of prevalent hemodialysis patients is also on the rise worldwide. Patients above 75 years of age comprise anywhere between 18 and 40 % of prevalent patients [1]. Within the elderly population, the incident rates of dialysis initiation rise with increasing age.

The Burden of Comorbidity in the Elderly Dialysis Patient

Many elderly dialysis patients may have serious comorbidities like diabetes, heart failure, stroke, and dementia. Almost a third of them have four or more chronic conditions. The elderly dialysis patients often are frail, are prone to falls, and have impaired functional and cognitive abilities. They often suffer from a large symptom burden due to nonrenal causes. Frailty is common in dialysis patients, especially in those above 80 years. Frailty is diagnosed by the presence of three out of five qualifying symptoms (unintentional weight loss, self-reported exhaustion, slow gait speed, strength measured by a hand grip, and low physical activity) [2]. Elderly patients are more prone to falls and suffer from impaired functional and cognitive abilities. The elderly nursing home residents experience a significant loss in functional independence within the first 6 months of dialysis initiation [3]. These geriatric issues in the elderly with ESRD need special training for expert management. Geriatric nephrology is becoming an increasingly important component of dialysis practice. Given the above scenario, there has to be a paradigm shift in the way nephrologists get trained.

The Spiraling Cost of Care of the Elderly

In 2012, spending for ESRD patients increased 3.2 % to $ 28.6 billion. The steady rise in the elderly dialysis population, especially those with multiple comorbidities, contributes to the rise in the cost of dialysis care. Medicare data report even higher costs in the elderly with diabetes mellitus and congestive heart failure. Elderly patients with high scores of Charleston comorbidity index (CCI) show increased lengths of hospital stay and increased utilization of resources [4]. The higher cost of providing dialysis to the elderly (above 70) is mainly due to the actual cost of dialysis treatment rather than the cost of community and social services [5]. Dialysis provides questionable benefit in survival in the very elderly. This raises the question if the very sick elderly dialysis patients should be offered dialysis or not. This is a controversial issue and a serious discussion is out of the scope of this chapter. However, it does underscore the importance of conservative/palliative care in

dialysis. It is possible that conservative and/or palliative care in certain subset of patients may be a better alternative to dialysis where not much stands to be gained in survival and/or quality of life (QOL).

The Pre-dialysis Care and Complexities of Decision Making

Limited life expectancy on dialysis together with its variable effects on the functional status and quality of life in the elderly often make it difficult to objectively assess the effect of dialysis on survival. A major problem in this area is unplanned start of dialysis. In the USA alone, 42 % of incident dialysis patients start dialysis without having seen a nephrologist. The elderly patients who start dialysis in the hospital after an acute illness face the worst outcomes, with high early and late mortality. A significant number of those who get discharged end up losing functional independence [6] affecting their QOL. The time of initiation of dialysis in debilitated nursing home elderly patients is the so-called danger period with steep decline in functional independence and a rise in the incidence of death. Timely, comprehensive, and multidisciplinary pre-dialysis care is therefore mandatory and can make transition to dialysis easier in this vulnerable population.

Modality Choice in the Elderly

Many elderly patients may not be offered a choice of dialysis modality. Almost half of the patients on HD in the BOLDE study reported that they were not offered a modality choice even though almost 80 % of the patients on HD wanted to make such a choice [7]. When deciding the modality choice in the elderly dialysis patient, a comprehensive approach should incorporate the following in regard to the patient: life expectancy, preference, and benefits versus risks of therapy.

Life Expectancy

The expected overall survival on HD versus peritoneal dialysis (PD) is similar except in the elderly >65 years of age with diabetes.

Preference

Patients may prefer PD over HD owing to greater satisfaction with care on PD, although in general, the QOL overtime between the two modalities is similar [8].

Benefits and Risks of Dialysis Modalities (HD Versus PD)

The relative benefits versus risks between PD and HD may also impact choice of modality of dialysis. The risks include modality transfer, infections, access-related issues, QOL, and satisfaction with care. In the USA, elderly patients primarily switch from PD to HD for a variety of reasons, i.e., recurrent peritonitis, failure of ultrafiltration, and catheter malfunction. Such switches increase treatment burden and cost. Infection-related morbidity is commoner in the HD patients primarily due to the preferential use of central venous catheters (CVCs) in this population. Lack of pre-dialysis care often leads to use of central venous catheters (CVCs) as the predominant mode of dialysis access. The use of CVCs is highest in North America within the developed world. Overall, PD may be associated with a lower early risk due to a reduction in infection-related morbidity (due to CVCs used in HD). However, the late risk may be higher on PD owing to switch to HD (with a CVC). There is evidence that in elderly with average or above-average life expectancy, PD confers a lower lifetime risk related for hospitalization due to sepsis compared to HD with a CVC. However, in the elderly with limited life expectancy, such rationale to prefer PD over HD (with a CVC) may not be justified.

Both home-based therapies (HD and PD) and in-center HD are options for dialysis in the elderly patients. Most elderly dialysis patients start on HD as the initial modality (in-center, satellite, or home). In general, in-center HD is the most common mode of RRT for the elderly. In the USA, in-center HD is the commonest modality [9].

Regardless of the type of dialysis, elderly patients often encounter both perceived and real challenges when considering home-based RRT. These may include concerns related to home storage space and the often required alterations for water and wiring, lack of family support, as well as physical and functional debility. Some may apprehend social isolation by the thought of home-based dialysis.

However, there is increasing interest in promoting the use of home dialysis therapies in the elderly. Besides home HD and PD, assisted PD is another form of home therapy that can be offered to the elderly. In this instance, help offered by PD nurses at patients' homes can help reduce therapy cost. Both HD and PD can be offered at nursing homes but require dedicated staff and consistent supervision by skilled off-site nephrologists.

The concept of "conservative" or non-dialysis care is gaining increasing acceptance as an alternative means to the management of elderly patients with end-stage renal disease. With properly timed multidisciplinary planning, conservative care offers a structured way for managing symptom burden and QOL in selected elderly patients

Survival of the Elderly on Dialysis

The elderly patients are a truly heterogeneous lot. In the USA, the median survival after start of dialysis falls with increasing age and is reported to be as low as 15.6 months in those above 80 [10]. In a UK study, the median survival of

octogenarians was reported to be 28.9 months and was considerably higher than 8.9 months in those who chose conservative care. Such data seem to suggest that there may be some gain in survival with dialysis in this age group [11]. Of note, there has been no change in the exceptionally high one-year mortality in octogenarians and nonagenarians over the years. In this age group, the relatively flat rate of survival over the years raises the question if dialysis prolongs survival. The years spent on dialysis may be considered as a proxy for years of life gained since otherwise the patients would have died [12]. In the North Thames Dialysis Study (NDTS) [12], mortality was associated with both age and peripheral vascular disease. Thus, both age and comorbidity are important in the elderly when examining survival.

The survival on those between 70 and 80 years of age is only marginally better [13]. In the USA, the one-year survival in those 75 years or older is 54 %. Although registry data report higher mortality rates in the North American continent, one has to bear in mind that different population subgroups with differing comorbidities and access to care may impact such observations. On the other hand, relatively healthy elderly patients may do well on dialysis. Interestingly, withdrawal from dialysis is the second most common cause of cause of death in the dialysis patients above 75 years of age.

The number of comorbid conditions increases with age. As compared to an average of 2.5 chronic comorbidities afflicting individuals below the age of 70, those above 70 years of age have double the number of comorbidities. The relative risk of mortality with ESRD (as compared to individuals with no ESRD) is higher, 20, at age 45 than at the age of 75 when it is less than 3. Some studies have reported that it is not only the type but the number of comorbidities that may be important in individual patients when estimating the benefits of dialysis.

One has to bear in mind that the definition of survival may vary with the time of onset of ESRD which may be measured from the time GFR falls to less than 15 ml/min to when patients start dialysis. Other factors like late referral bias, as well as lack of meaningful data on the elderly who undergo conservative care, make survival data difficult to interpret. Time to referral and pre-dialysis planning can also impact survival in the elderly population. These patients are often referred late to the nephrologists. Available reports suggest an association between late referral and poorer outcomes (early death, prolonged and recurrent hospitalizations, etc.). Late referral may be associated with similar risk both in the elderly and the nonelderly patients. However, since relatively more elderly patients are referred late, this accounts for a large proportion of excess mortality on dialysis [14]. A recent report suggested that despite earlier referral to nephrologists, there has not been a meaningful impact on survival of elderly patients [15]. However, this report did not address issues like severity of CKD and comorbid load at the time of nephrology referral. Neither did it assess other important outcomes like hospitalization rates, cost of care, etc.

There is no doubt that multiple comorbidities and poor functional status at the start of dialysis have an adverse impact on outcome with almost 25 % mortality rate in the first 3 months. In high-risk patients with significant morbidity and functional dependence, there may not be much gain in survival. In this regard, the nursing home population is especially at risk with less than half of this population surviving after the first 9 months [3]. Multiple tools are available to help define prognosis of

such patients. These take into account factors like comorbidity and mental and functional disability. These factors are then used to assign risk scores for predicting survival [16, 17]. A patient's own nephrologist may in some instances be able to provide a unique perspective on the patient's prognosis [18].

Quality of Life (QOL)

In many elderly patients on dialysis, QOL may be equally important to survival. In some, it may score even higher on the priority scale. In other words, dialysis should not only add "years to life" but should also add "life to years." For some, a visit to the HD unit may provide a means for social interaction and add to the overall quality of life. The elderly HD patients may in fact fare better than their younger counterparts on SF-36 scores [19]. In the NTDS [5], the elderly dialysis patients reported mental QOL scores that were similar to the general elderly population in the USA or the UK. However, the physical scores were lower in the dialysis patients. Data from the BOLDE study [7] show that there is no significant difference in QOL between HD and PD. However, the elderly reported less illness intrusion by PD than HD. A recent study has reported that the nephrologists would avoid dialysis recommendation if it was expected to considerably reduce QOL [20]. It is obvious that apart from patient preference, comorbidity, cognitive ability, and QOL are obvious factors that should guide dialysis decision making in the elderly patients.

Conservative Care

The concept that dialysis may not be the only option for the elderly with ESRD has gained ground over the last several years. It is now accepted that a subset of elderly ESRD patients (those with multiple comorbidities, patients who have made an informed choice, etc.) may elect to forgo dialysis and instead opt for conservative care. Conservative care is often misconstrued as palliative care. In reality it is an actively managed care of the elderly ESRD patient with emphasis on close monitoring as well as management of various clinical, psychological, and functional parameters on a regular basis. However, nephrologists' perspective on offering such care varies widely in reported studies [21]. Such disparity of perspective also exists between primary care physicians and nephrologists [22]. One of the key factors in considering such option is adopting a shared decision-making approach involving all personnel (primary physician, nephrologist, social worker, dietician, home nurse, etc.). The overall survival of patients with conservative care may be lower than those who choose to dialyze. However, such patients often end up spending a majority of their final days in the dialysis units and/or in the hospital [21].

Key Points

1. More and more elderly patients with ESRD are going on dialysis.
2. Elderly ESRD patients have multiple comorbidities and require special care owing to complex problems associated with old age.
3. This special subset of ESRD patients will need nephrologists with special skill sets particular to geriatric care.
4. The decision to choose dialysis and the type of dialysis needs a structured approach between the patients, their caregivers, the nephrologist, and other members of the multidisciplinary care team.
5. Both survival on dialysis and quality of life should be considered carefully when individual dialysis decisions are being made.
6. Conservative care on dialysis is often not discussed with the elderly patients and may be the right option for a selected group of elderly patients.

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