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Elderly patients: when and how to perform dialysis?

Pacjenci w podeszłym wieku: kiedy i jak rozpoczynać dializoterapię?

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S u m m a r y

The elderly constitute the most rapidly expanding category of dialysis patients, with specific problems, mainly caused by a high burden of comorbidities and frailty. Dialysis treatment should be implemented in this population based on clinical indicators. For patients with high mortality risk conservative treatment may be a viable option. On the other hand, elderly patients with no or mild comorbidities can be appropriate candidates for kidney transplant. The goal of renal replacement therapy in the elderly is to bring more years of satisfactory quality life and not prolonged suffering.

Key words: elderly, frailty phenotype, timing of dialysis onset, conservative treatment, hemodialysis, peritoneal dialysis

S t r e s z c z e n i e

W populacji chorych rozpoczynających dializoterapię obserwuje się w ostatnich latach wzrost liczby chorych w podeszłym wieku, którzy są grupą szczególnego ryzyka zagrożenia chorobowością i śmiertelnością. Wybór metody leczenia nerkozastępczego w tej grupie zależy od stanu klinicznego. U chorych z wysokim ryzykiem śmiertelności należy brać pod uwagę możliwość optymalnego leczenia zachowawczego. U pacjentów w dobrym stanie ogólnym, z niewielką współchorobowością można rozważyć transplantację nerki. Celem leczenia nerkozastępczego w podeszłym wieku jest uzyskanie satysfakcjonującej jakości życia, a nie przedłużanie cierpienia.

Słowa kluczowe: chorzy w podeszłym wieku, „kruchy" fenotyp, czas rozpoczęcia dializ, leczenie zachowawcze, hemodializa, dializa otrzewnowa

INTRODUCTION

Patients over 75 years old compose the fastest growing age category of incident dialysis patients. According to the United States Renal Data System registry (USRDS 2011) in 2008 nearly 30 thousand patients aged 75 years + started dialysis therapy in the US, whereas 16 years earlier (1992) the respective figure was around 10 thousand (1).

The same tendency is apparent in Europe, where the mean age of incident patients was 64 years and in such countries as Belgium, France and Italy it was 67 (2).

The fact of the ageing dialysis population is also clearly documented by the latest published epidemiological data on the situation in Poland. Among 5100 dialysis patients who began dialysis treatment in 2009, 53.4% were older than 65 years, and 23% were above over 75 years (3).

THE KEY ISSUE: WHICH ELDERLY PATIENTS REALLY BENEFIT FROM RENAL REPLACEMENT THERAPY?

In the process of qualification for dialysis treatment, the frequent and severe co-morbidities exhibited by elderly patients should be carefully considered (4). As a consequence of this high burden of co-morbidities, many elderly patients exhibit the features of frailty phenotype, associated with increased risk of falls, disability, hospitalization and death. It leads to functional impairment, i.e. the decreased ability to perform activities of daily living (ADLs) or instrumental activities of daily living (IADLs). The criteria for frailty phenotype include unintentional weight loss, slow walking speed, weakness, exhaustion, and low physical activity.

The evaluation of the activities of daily living takes into account the capability to perform principal self-care functions including: eating, dressing, toileting, maintaining personal hygiene, bed mobility and transfer, and walking. Listed in the instrumental activities of daily living are: medication management, maintaining personal finances, cooking, driving, shopping, telephone use, and care of pets (5).

The available published data clearly show a strong relationship between the prevalence of frailty and the level of renal function (6). In the Dialysis Morbidity and

Mortality Study (DMMS) Wave II study the criteria for frailty were met by 67.7% of patients of all ages and according to the age ranges 66.4% (aged 50-60 years) and 78.8% (age > 80 years) (7). Wilhelm-Leen et al. observed two-fold higher risk of frailty in patients with mild CKD and six-fold greater risk with glomerular filtration rate (GFR) < 45 ml/min/1.73 m² (8). Johansen et al. analyzed patients with ESRD; frailty was observed in 44.4% of patients aged < 40 years, 74.2% of those aged 60-70 years, and 78.8% of those older than 80 (9). Among the general population criteria for frailty were met by 7% in those aged > 65 and 40% of those older than 80 (8).

In this context the results of two observational studies are alarming. Kurrella Tamura et al. reported the dismal results of dialysis therapy in a cohort of 3700 nursing home residents of mean age 73.4 ± 10.9 years. During the first three months after starting dialysis over 25% died and a further 33% deteriorated in functional status. At one year after dialysis onset mortality reached 76%, 11% declined in functional status, and only a small minority of 13% maintained the functional status during the whole 12-month observation period (10). Similarly ominous results were published by Jassal et al. in the same issue of the New England Journal of Medicine on loss of independence in patients starting dialysis at 80 years or older. At the time of dialysis initiation the majority of patients (76 of 97, 78%) were living at home with no assistance for the activities of daily living. After half a year 28 patients had died (28.9%), at 2 years after starting dialysis 59 patients had died (61%), whereas of 33 alive (32%) only 11 (11.3%) preserved independence (11).

These data raise the crucial question of whether all elderly patients should be included in chronic dialysis programs. A clue to the answer is provided by the observations of Murtagh et al. in a population of 129 stage 5 chronic kidney disease patients over 75 years old. The cohort was divided into two groups treated by dialysis (52 patients) and receiving the maximal conservative management (77). Both groups were followed from the drop of glomerular filtration rate below 15 ml/min for 5 years. The decision for dialysis or conservative treatment was made jointly by each patient with the family and nephrologist. Of the total of 129 patients in the study, 63 (48.8%) died before the end of the study: 12 from the dialysis group (23%) and 51 from the conservative group (66%). The superior survival of dialysis patients was statistically significant (p < 0.001). However, this difference was lost in the analysis limited to 25 patients (10 dialysis treatment, 15 conservative therapy) with high comorbidity, particularly ischemic heart disease (12).

As the conclusion from this study, comorbidity should be a major consideration when options of dialysis and conservative treatment are discussed. As a helpful tool, the tables allowing one to calculate the probability of surviving 6 months on dialysis treatment can be used (13). Each risk factor is ascribed a point value, i.e.

Total dependence for transfers 3; BMI < 18.5 kg/m² – 2, peripheral vascular disease stage 3 or 4 – 2; congestive heart failure stage 3 or 4 – 2; severe behavioral disorder – 2; unplanned dialysis initiation – 2; active malignancy – 1; diabetes mellitus – 1; dysrhythmia – 1. The particular total score is associated with a definite 6-month mortality rate: a total score of 0 for a 6-month mortality rate of 8%; 1 for 8-10%; 2 for 14-17%; 3-4 for 21-26%; 5-6 for 33-35%; 7-8 for 50-51%; and ≥ 9 for 62-70%.

In the authors' personal opinion, when the 6-month mortality risk exceeds 50%, conservative treatment should be a valid option.

The choice between dialysis treatment and conservative therapy should respect the principles of shared decision-making. Shared decision-making should involve at a minimum the patient and the physician. If a patient lacks decision-making capacity, decisions should involve the patient's legal agent. With the patient's consent, shared decision-making may include family members or friends and other members of the renal care team. Physicians should fully explain diagnosis, prognosis, and all treatment options to each patient. The explanation of treatment options should include: 1) available dialysis modalities; 2) not starting dialysis and continuing conservative management, which should include end-of-life care; 3) a time-limited trial of dialysis; and 4) stopping dialysis and receiving end-of-life care. Choices among options should be made by patients or, if patients lack decision-making capacity, their designated legal agents. Their decisions should be informed and voluntary (14).

WHAT IS THE OPTIMAL TIME TO START DIALYSIS TREATMENT?

A few papers published in the last years have undermined the notion that early, "healthy" dialysis initiation will positively affect patient survival. In the Australian and New Zealand "IDEAL" study encompassing over 800 persons patients were randomly assigned either to commence dialysis when the estimated GFR (eGFR) was 10.0 to 14.0 ml per minute (early-start group) or to continue to receive routine medical care and commence dialysis when the eGFR was 5.0 to 7.0 ml per minute (late-start group). The study protocol permitted patients who were assigned to the late-start group to commence dialysis when the eGFR was more than 7.0 ml per minute if the treating physician recommended that they do so. As a result, the mean eGFR at the start of dialysis in the late-start group was 9.8 ml per minute per 1.73 m² – far above the target of 5 to 7 ml per minute per 1.73 m². Nevertheless, no difference was discerned in survival between early and late start groups, and late onset gained an additional 6-month period of freedom from dialysis (15).

The American study went further in questioning the benefit of early hemodialysis onset, claiming that early start of hemodialysis may even be harmful. The hemodialysis onset at higher eGFR of over 10 ml/min was in

the study associated with significantly elevated mortality risk (16).

The authors of this overview fully support the commentary of Norbert Lameire and Wim Van Biesen accompanying the IDEAL trial publication, particularly the statement that the dialysis start should be based on clinical factors rather than numerical criteria such as the eGFR alone (17).

HOW TO PERFORM DIALYSIS IN ELDERLY PATIENTS?

The first issue is the appropriate selection of dialysis modality, i.e. use of peritoneal dialysis and hemodialysis in suitable patients. An assisted peritoneal dialysis program is a good option for well-nourished patients. In our own peritoneal dialysis program we currently have an 89-year-old woman, who started the treatment 10 years ago at age 79. Her peculiar features are short height of 151 cm, body weight 48.5 kg and BMI 21.3.

It is worth emphasizing that hemodialysis should be performed in the elderly in a delicate manner with particular attention to slow ultrafiltration rate and avoidance of hypotensive episodes taking into consideration that due to general atherosclerosis elderly patients are vulnerable to ischemic complications. Of great importance is maintenance of residual diuresis. In our own study performed in a geriatric cohort of hemodialysis patients with age ranging from 71 up to 86 years the independent mortality risk factors in 4-year prospective observation were less residual diuresis (p= 0.005) and lower BMI (p = 0.017) (18).

It is also proven that creation of a native arteriovenous fistula gives a survival advantage in the elderly population. In some elderly patients a hemodialysis program can be applied temporarily when simultaneously compromised cardiac and renal function causes volume overload. In this patient category it is possible to withdraw hemodialysis after improvement of cardiac indices (19).

It should also be remembered that advanced age is not an obstacle to transplantation. Elderly patients with no or mild comorbidities may be suitable transplant candidates (5).

In summary, the goal of renal replacement in the elderly population is to bring them more life years of satisfactory quality, and not merely life prolongation with further suffering.

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