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ORIGINAL ARTICLE

Outcomes in elderly patients with end-stage renal disease: Comparison of renal replacement therapy and conservative management

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KEYWORDS
end-stage renal failure;
palliative care;
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Abstract *Background/purpose:* With global socioeconomic development and improvement in the general health care system, life expectancy increases, resulting in an increasing incidence of end-stage renal disease in the elderly population. We compared the survival rate in elderly patients aged ≥ 65 years with Stage 5 chronic kidney disease, managed with either renal replacement therapy (RRT) or conservative treatment. We also tried to identify factors associated with survival in these two groups.

Methods: This is a single-center retrospective study of patients aged ≥ 65 years with Stage 5 chronic kidney disease, who were referred to the nephrology team for renal advance care planning to assist in decision making for RRT or conservative treatment from 2005 to 2013. They were followed up till death or till December 31, 2014. Baseline characteristics (demographics, clinical data, functional status, socioeconomic factors, and laboratory parameters) and mortality data between the two groups were compared.

Results: A total of 558 patients were recruited during the study period, in which 126 (22.6%) patients opted for RRT and 432 (77.4%) for conservative treatment. Patients with less significant comorbidities, lower modified Charlson's Comorbidity Index scores, better functional and mental statuses, as well as better socioeconomic status were more likely to choose RRT. The RRT group had a longer median survival of 44.6 months compared with 10.0 months in the conservative treatment group. The survival advantage of the RRT group was lost in patients older than 85 years, or in those with high comorbidity (modified Charlson's Comorbidity Index score of ≥11) or dependent mobility. Age, comorbidity, and mobility were predictors of mortality in the RRT group. For the conservative group, age, mobility, and sex were predictors of mortality.

Conclusion: Elderly patients with end-stage renal disease can be benefited from RRT. However, the survival advantage of RRT was lost in very-advanced-age patients older than 85 years of age, in those with high comorbidity, or in functionally dependent patients.

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目的: 在全球性的社會經濟發展下;預期壽命得以延長;導致在老年人口中;末期腎病的發生率亦有所增長。我們在 ≥ 65 歲的第 5 期慢性腎病年老患者間;比較了腎置換療法 (RRT) 與保守療法所達到的存活率。同時;我們亦嘗試找出影響這兩組病人存活的因素。
方法: 這是一項單中心的回溯性研究;對象為 ≥ 65 歲的第 5 期慢性腎病患者。他們是在 2005 年至 2013 年期間;被轉介至腎科團隊接受預設照顧計劃;以協助他們選擇 RRT 或保守療法；追蹤期至 2014 年 12 月 31 日或病人去世為止。我們比較了兩組病人的基線特徵及死亡率數據。
結果: 本研究共納入 558 位病人;其中 126 (22.6%) 人選擇了 RRT;432 (77.4%) 人選擇了保守療法。RRT 組的存活中位數為 44.6 個月;較保守療法組的 10.0 個月長。然而;在 >85 歲、共病顯著 (mCCI ≥ 11)、或不能獨立行動的病人中;RRT 的存活優勢消失。在 RRT 組中;年齡、共病、及行動力是死亡的預測因子,在保守療法組中;年齡、行動力、及性別是死亡的預測因子。
結論: 年老末期腎病患者可以獲益於 RRT,然而;在 >85 歲的極高齡者、共病顯著者、或不能獨立行動的病人中;RRT 的存活優勢不復存在。

Introduction

With global socioeconomic development and increasing prosperity, the living environment and medical care service have improved over the past decades. The resulting increase in life expectancy, together with lower birth rates accompanying socioeconomic development, means that older people are now becoming a larger proportion of the general population.[1] As the estimated glomerular filtration rate (eGFR) declines in parallel with age,[2,3] longer life expectancy means more elderly patients are reaching end-stage renal disease. In the United States, the prevalence of end-stage renal disease continues to increase in all age groups, with the fastest growing rate among older patients. Since 2000, the number of end-stage renal disease patients aged 65—74 years and above 75 years have increased by 30% and 50%, respectively, in 2012. The prevalence of renal replacement therapy (RRT) patients aged ≥ 75 years increased from 17.7% in 1992 to 24.5% in 2012.[4]

In the United Kingdom, the percentage of RRT patients aged > 70 years increased from 19.2% to 25% between 2000 and 2013.[5] In Europe, patients aged ≥ 65 years accounted for 42% of the European RRT population in 2012, with 20% in the age group of 65—74 years and 22% in ≥75-year age group. China also had a similar increasing trend, with 18% and 24.2% of the chronic kidney disease population being among those aged 60—69 years and ≥70 years, respectively.[6,7]

Hong Kong is also facing similar challenges with an aging population. Approximately 95% of patients receiving RRT were managed by hospitals or dialysis centers of the hospital authority. Owing to the peritoneal dialysis (PD)-first policy, the number of patients receiving PD had increased from around 200 in 1985 to more than 3000 in 2006, accounting for three-quarters of the dialysis population locally in 2011. In the past decade, the median age of patients on RRT had increased from 56 years to 60 years, with an increasing prevalence in the age group of >75 years.[8—10]

Apart from the aging population, more patients with multiple comorbidities were commenced on RRT. Over 40% of the patients on dialysis had diabetes mellitus in both the United States and the United Kingdom. This older patient group with comorbidities also experiences worse outcomes, including increased mortality and impaired quality of life.[4,5,11]

It is often assumed that dialysis is appropriate for all individuals and improves survival compared with conservative management. However, it remained controversial in patients with older age and in those who are more dependent in daily activities, with multiple comorbidities. In a local study of 199 elderly patients aged ≥ 65 years with Stage 5 chronic kidney disease (CKD), survival was improved by almost 1.5 years by PD, and the risk of emergency hospitalization was halved.[12] Dasgupta and Rayner,[13] in a retrospective study of 129 patients aged > 75 years with Stage 5 CKD, demonstrated that the survival rate had increased 2.9-fold by dialysis. However, no significant survival advantage could be demonstrated in patients who were also suffering from ischemic heart disease, which was common in older patients. Kurella and colleagues[14] also reported that dialysis in US patients aged 65—79 years and 80—84 years had a significant median survival of 24.9 months and 15.6 months, respectively. However, as age advanced, survival benefits declined. The median survival in very old patients (85—89 years) was 11.6 months, and 8.4 months for patients aged ≥ 90 years. Moreover, the presence of two to three comorbid conditions in dialysis patients aged > 65 years was associated with substantially increased mortality compared with those with better health.[14]

Objectives

In this study, we compared the survival rate in elderly patients aged ≥ 65 years with Stage 5 CKD, managed with either RRT or conservative treatment. We also tried to identify factors associated with survival in these two groups.

Methodology

Study design

This is a single-centered, retrospective cohort study. Patients with diabetes mellitus or those without diabetes, followed up at the Caritas Medical Centre, would be referred to the nephrology team for assessment when their serum creatinine level was >350 μmol/L or >400 μmol/L, respectively. A renal advance care planning (ACP) meeting, including a nephrologist, medical social worker, and patient and his/her family, would be arranged as soon as the