Withdrawal of Renal Replacement Therapy: The Role of Palliative Care

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Abstract
Introduction: With aging populations and wider access to renal replacement therapy (RRT), more patients undergo dialysis, often with declining quality of life, leading to consideration of RRT withdrawal. Early integration of palliative care (PC) is essential to ensure a patient-centered approach. This study evaluates the clinical course of patients admitted to a university hospital PC unit who had RRT withdrawn.
Methods: Retrospective observational study of all patients admitted to a hospital-based Palliative Care Unit (PCU) in Portugal with RRT suspension from September 2018 to February 2024. Patient demographics, clinical course, symptoms, complications, and management were analysed.
Results: Twenty-seven patients were included (59% male; mean age 77.4 years). Almost all had ≥1 cardiovascular risk factor; common comorbidities included heart failure (51.9%), cerebrovascular disease (48.2%), and active neoplasia (48.2%). RRT was withdrawn in 77% due to irreversible consciousness impairment or hemodynamic instability. Nephrology (100%) and PC (92.3%) were the most involved specialties. Most patients (81.5%) had ≥3 symptoms, primarily asthenia (85.2%), anorexia (81.5%), dyspnea (70.4%), and pain (66.7%); many presented before RRT withdrawal. Post-withdrawal, constitutional symptoms increased. Mean PC follow-up was 13.4 days; median survival was 12 days. All but one patient died in the hospital.
Conclusion: Short PC follow-up and limited patient involvement in RRT withdrawal decisions (22%) highlight the vulnerability of this population and late referral to palliative care. Earlier integration and proactive advance care planning are critical to optimizing patient-centered decision-making and symptom management.

Keywords: Advance Care Planning; Decision Making; Kidney Failure, Chronic; Palliative Care; Patient Care Planning; Renal Dialysis; Renal Replacement Therapy; Withholding Treatment

INTRODUCTION
According to the KDIGO 2012 guidelines, chronic kidney disease (CKD) is defined as abnormalities of kidney structure or function, present for ≥ 3 months, with health implications. Stage 5 CKD corresponds to a glomerular filtration rate (GFR) of less than 15 mL/min/1.73 m², requiring consideration of renal replacement therapy (RRT) to sustain life.[1]
Data from the Portuguese Society of Nephrology (PSN) registry and the RENA Study (2020) indicate that Portugal has one of the highest incidence and prevalence rates of CKD stage 5 in Europe, highlighting the growing burden of advanced CKD and the need for both effective RRT and structured conservative management strategies.[2,3] In response, Ministerial Orders No. 12635/2023 (11 December) and No. 3391/2025 (17 March) approved the Action Plan for the Implementation of the National Strategy for the Promotion of Kidney Health and Integrated Care in Chronic Kidney Disease 2023–2026. This plan aims to strengthen CKD prevention and treatment strategies, improve the organisation and coordination of healthcare services, and implement a person-centred approach, ensuring high-quality standards throughout the continuum of care.[4] Although tailored to the Portuguese context, this strategy aligns with global initiatives, such as the World Health Organization's Global Action Plan on Noncommunicable Diseases, representing an innovative commitment to integrated and comprehensive CKD care.[5] In Portugal, the Directorate-General of Health (DGS) Guideline nº 017/2011 (updated in 2012) outlines four management

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options for CKD stage 5: hemodialysis, peritoneal dialysis, kidney transplantation, and conservative (non-dialytic) management, highlighting the role of palliative care for patients opting for the latter.[4] With the progressive ageing of the population and increased access to RRT, the number of patients undergoing dialysis continues to rise. Nevertheless, conservative management should be considered as a valid alternative, openly discussed with patients to enable informed and conscious decision-making. Such discussions should be guided not only by clinical considerations but also by ethical principles of autonomy, beneficence, and non-maleficence — ensuring that patient values are respected, benefits are maximised, and harm is avoided.

While RRT may prolong survival, it does not invariably improve quality of life. In such cases, discontinuation may be appropriate. The Renal Physicians Association (RPA) has outlined clinical and ethical scenarios in which dialysis withdrawal is reasonable, including[6]:

- Patients with decision-making capacity who refuse dialysis or request its discontinuation, including those with advance directives or legal representatives upholding the patient's wishes.
- Patients with profound, irreversible neurological impairment, lacking awareness, purposeful behaviour, or sensation.
- Patients with acute kidney injury or CKD with terminal non-renal illness (life expectancy ≤6 months) or medical conditions precluding safe dialysis.

When conservative management or RRT withdrawal is determined, comprehensive symptom control becomes imperative to maximise comfort and minimise suffering. The role of palliative care (PC) is crucial in these scenarios.[7,8] For example, a patient who wishes to spend their final days at home, free from burdensome interventions and surrounded by loved ones, illustrates the value of integrating PC to honour preferences, enhance quality of life, and preserve dignity at the end of life.

According to this, the PSN has established a Working Group on Conservative Care, which guides integration of palliative care into the management of advanced CKD patients, tailored to the Portuguese healthcare context.[9]

PC integration ensures a compassionate, patient-centred approach that respects individual values while optimizing symptom management and alleviating distress. Dialysis withdrawal can be accompanied by challenging symptoms — most frequently asthenia/anorexia, pruritus, dyspnea, altered consciousness, peripheral edema, pain, xerostomia, and gastrointestinal disturbances.[8,9] This study retrospectively analysed patients admitted to a hospital-based Palliative Care Unit in Portugal who underwent RRT withdrawal from September 2018 to February 2024. The primary aim was to describe the clinical trajectory of these patients and reflect on the role of PC in advanced CKD. Secondary objectives included characterising reasons for withdrawal, comorbidity profiles, prior healthcare utilisation, symptom burden and management, and post-withdrawal survival.

METHODS

Study Design and Sample Selection

We conducted a retrospective observational cohort study involving all patients with stage 5 chronic kidney disease (CKD) for whom the decision to discontinue renal replacement therapy (RRT) was made. These patients were admitted to a hospital-based Palliative Care Unit in Portugal from its opening in September 2018 until February 2024.

Data Collection

Data were obtained from a review of medical records, in compliance with the General Data Protection Regulation and the ethical principles outlined in the Declaration of Helsinki of the World Medical Association. The study was approved by the local institutional Ethics Committee. (Research Project No. 118/2024).

Variables analysed included sociodemographic data [(sex, age, Palliative Performance Scale (PPS)], comorbidity profile and home medication (cardiovascular risk factors, heart failure, cerebrovascular disease, neoplasia, peripheral arterial disease); information on CKD diagnosis (date of diagnosis, initiation and discontinuation of dialysis technique); assessment of clinical trajectory in the year before admission [number of hospitalizations and emergency department (ED) visits]; and, for the admission that prompted RRT withdrawal, reason for admission, length of stay, clinical manifestations, treatments provided, date of discharge, and discharge destination. We also analysed the specialties involved in the decision to withdraw RRT, the date of referral to palliative care (PC), the referring specialty, and survival time after dialysis withdrawal.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences® (SPSS), version 28.0. Categorical variables are presented as absolute and relative frequencies (%). Quantitative variables are presented as means, minimum, and maximum values.

RESULTS

Sociodemographic Data

The study population comprised 27 patients, 16 male (59%) and 11 female (41%), with a mean age of 77 years (range: 57–88 years; standard deviation: 8.65 years) and a median age of 80 years.

Chronic Kidney Disease and Comorbidities

All patients had stage 5 CKD of various etiologies, with diabetic nephropathy being the leading cause of renal

function loss in 33% of cases (Table 1). The mean duration of RRT was 5.3 years (range: <12 months to 30 years; median: 3 years).

Except for one individual, all patients presented at least one cardiovascular risk factor: hypertension (n = 26), type 2 diabetes mellitus (n = 15), dyslipidemia (n = 23), and overweight/obesity (n = 4). Most patients also had other comorbidities, including cardiovascular, neurological, or oncological conditions (Table 1).

Table 1. Etiology of chronic kidney disease and main comorbidities in the study population (N=27)

CKD Etiology
AA amyloidosis (1);
Multiple myeloma–related (1);
Hypertensive nephrosclerosis (4);
Membranoproliferative glomerulonephritis (3);
Diabetic related nephropathy (10);
Multifactorial (4);
Unknown (4).
Cardiovascular comorbidities
Heart failure (14);
Peripheral artery disease (10);
Ischemic heart disease (6);
Valvular heart disease (3);
Hypertensive heart disease (2).
Neurological comorbidities
Dementia (4);
Ischemic leukoencephalopathy (4);
Post-stroke status (4);
Epilepsy (1).
Respiratory comorbidities
COPD (3);
Asthma (3);
Sleep apnea syndrome (3)
Hepatic comorbidities
Liver cirrhosis (3);
Hepatic steatosis (3)
Active neoplasia
Renal cell carcinoma (3);
Colon/rectal adenocarcinoma (2);
Urothelial neoplasm (2);
Gastric adenocarcinoma (1);
Prostate adenocarcinoma (1);
Multiple myeloma (1);
Cancer of unknown primary (1);
Cutaneous squamous cell carcinoma (1).

Treatment, Emergency Department Use, and Hospitalizations in the Year Before RRT Withdrawal

Regarding outpatient treatment, most patients were on polypharmacy. In addition to medication for cardiovascular risk factor control, other frequently prescribed drug classes included opioids (n = 9), neuroleptics (n = 13), benzodiazepines (n = 12), and antidepressants (n = 8) (Fig. 1).

Except for three patients, all others visited the ED at least once in the previous year (n = 24), with a mean of 3.9 visits. Twenty-two patients had at least one hospitalization in the year before RRT withdrawal (mean: 1.9 hospitalizations).

Index Hospitalization in Which RRT Withdrawal Was Decided

Reasons for hospital admission varied widely, including infectious conditions and vascular events (Table 2).

Table 2. Reasons for hospital admission during which renal replacement therapy was suspended

Category	Reason for Admission
Infectious (7)	Sepsis secondary to endocarditis (1); SARS-CoV-2 infection (1); Acute pyelonephritis (2); Community-acquired pneumonia (3)
Cardiovascular (5)	Decompensated heart failure (1); Ischemia / peripheral artery disease (4)
Neoplastic (3)	Bilateral hydronephrosis secondary to prostate neoplasia (1); Uncontrolled oncologic pain (2)
Surgical (2)	Exploratory laparotomy / total gastrectomy (1); Intestinal obstruction (1)
Neurological (5)	Stroke (1); Subdural hematoma (1); Acute confusional state / delirium (3)
Metabolic (1)	Hypernatremia (1)
Respiratory (4)	Acute exacerbation of COPD or asthma (4)

Twelve patients (44.4%) were admitted under Internal Medicine. A small minority were admitted under other medical specialties (one each in Endocrinology, Haemato-Oncology, and Infectious Diseases). Surgical specialties accounted for eight admissions (29.6%)—three in Urology, three in Vascular Surgery, one in General Surgery, and one in Neurosurgery. Four patients were admitted directly to the PCU, two from the ED and two from the outpatient Palliative Care clinic. Although inpatient Nephrology beds are available in our hospital, these patients were not admitted to Nephrology wards because their primary reason for hospitalization was unrelated to chronic kidney disease or renal replacement therapy. After the decision to discontinue RRT, patients were transferred to the Palliative Care Unit for optimal symptom management.

All RRT withdrawals were decided during hospitalization, generally following a significant deterioration in the patient's clinical status. In 77% of cases, the decision was preceded by altered consciousness and/or hemodynamic instability, and only six patients (22%) participated in the decision-making process. Nephrology was involved in all withdrawal decisions, while Palliative Care participated in 25 cases (92.6%) (Table 3).

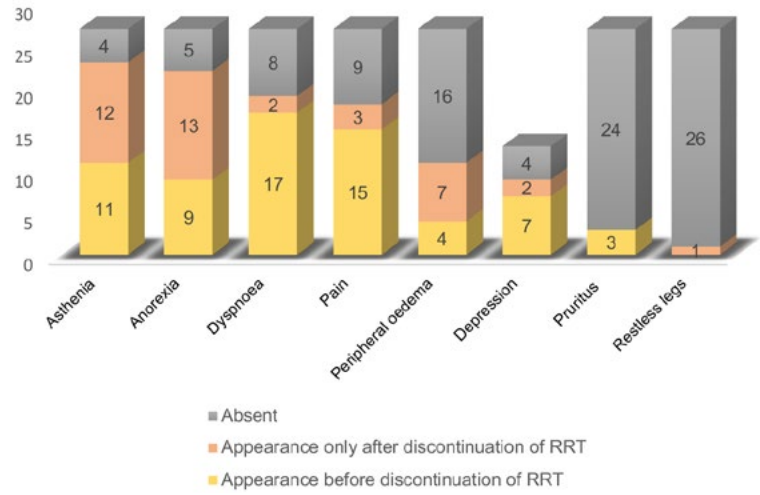

Figure 1. Therapy carried out before and after discontinuation of RRT

Table 3. Reasons for renal RRT suspension and specialties involved in the decision-making

Reason for RRT suspension beyond clinical deterioration	Number of patients (N=27)
A) Intolerance to RRT (hemodynamic instability, behavioral changes, etc.)	13
B) Coma	8
C) Patient's will/desire	6
Specialties involved in the decision to suspend RRT	
Nephrology	27
Palliative Care	25
Other specialties	9

All patients were symptomatic during admission; in fact, 81.5% had three or more complaints, most frequently asthenia (85.2%), anorexia (81.5%), dyspnea (70.4%), and pain (66.7%). Dyspnea and pain were already present before RRT withdrawal in 89.5% and 83.3% of patients, respectively. Conversely, constitutional symptoms such as asthenia and anorexia tended to worsen after withdrawal. All patients experienced some degree of altered consciousness during admission, ranging from apathy/hyporesponsiveness (n = 19) to episodes of psychomotor agitation (n = 8). Notably, in 17 patients (63%), these changes were already present before withdrawal (Fig. 2).

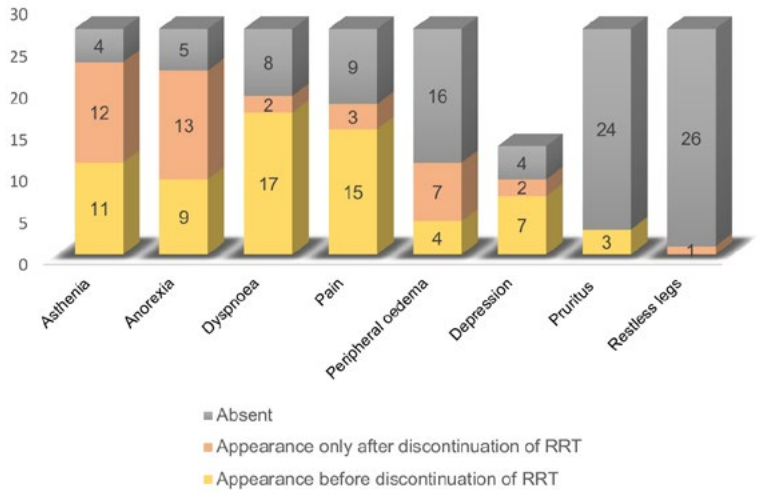

Figure 2. Clinical manifestations presented during hospitalization

After withdrawal, various therapeutic strategies were implemented to optimize symptom control - particularly for pain, dyspnea, and agitation - some of which were already in use before admission (Fig. 1). Non-beneficial medications were discontinued in all patients except one, who died within minutes of the first palliative care assessment.

The mean total length of hospital stay was 31.5 days (range: 6–99 days), with a mean of 10.6 days spent in the PCU (range: 1–48 days), where all but one patient died;

the latter was transferred to a PCU in the National Network for Integrated Continuous Care. Mean survival after RRT withdrawal was 12 days (range: 2–47 days).

Palliative Care Follow-up

Of the 27 patients, 22 (81.5%) had their first contact with palliative care during the hospitalization in which RRT withdrawal was decided. In most cases, the referral was initiated by the specialty responsible for the initial admission, following a suggestion from Nephrology to discontinue RRT. Five patients (18.5%) were already followed up at the Palliative Care Outpatient clinic - three for less than one month, one for approximately five months, and one for two years. Two of these patients were admitted for review of their advance care plan, including the possible discontinuation of RRT. The remaining patients were admitted for symptom control, and the decision to discontinue RRT was made based on their clinical course during hospitalization.

Notably, when referral occurred during hospitalization, 18 patients (66.7%) had a PPS score ≤30%, indicating very late referral.

During hospitalization, the mean duration of palliative care follow-up was 13.37 days (range: 1–48 days).

DISCUSSION

CKD is strongly associated with type 2 diabetes mellitus (T2DM) and hypertension, and is more prevalent in individuals over 60 years of age.[10,11] The findings of this study are consistent with these data, in fact, approximately 50% of patients had T2DM (the most frequent cause of CKD in the sample), and nearly all had hypertension and dyslipidemia, with a mean age well above 60 years. Furthermore, most patients had between three and five comorbidities, highlighting that individuals with CKD are complex patients with multiple needs and significant impairment of quality of life.

As with other end-stage organ failure syndromes, the progression of CKD is characterised by gradual decline, punctuated by intermittent acute exacerbations from which only partial recovery occurs, making death appear sudden. These exacerbations are usually associated with hospital admission and, although patients often survive several such episodes, there is a gradual deterioration in health status and functional capacity.[12,13] Frequent hospital readmissions are a major issue for CKD patients and contribute to increased healthcare costs in this population. In the present study, only three patients did not require ED visits or hospitalization in the year preceding RRT withdrawal, corroborating this pattern. Additionally, most patients had a high symptom burden, although no significant worsening was observed after withdrawal.

In all cases, RRT withdrawal was appropriately justified according to clinical guidelines and scientific recommendations.[7] However, only a minority of patients (n = 6) participated in the decision-making process, expressing their wishes. The majority had severe neurological impairment, which prevented them from communicating or making informed and conscious decisions. This finding underscores the importance of early discussions about advance care planning, including the potential withdrawal of RRT, to ensure greater patient involvement in decision-making and better preparation for this stage of illness.

Family conferences complemented this approach, involving the Palliative Care, Nephrology teams and the attending specialty, nursing staff, and, when appropriate, social workers and psychologists. These meetings served to explain the clinical situation and the rationale for withdrawal, clarify any questions, and support families throughout the process. Efforts were made to align decisions with the patient's known values and previously expressed preferences, ensuring a shared, transparent, and ethically grounded decision-making process.

Regarding in-hospital treatment, most patients (85.2%) received opioids, with 33.3% already on opioid therapy before admission. Indeed, some pharmacological principles of end-of-life care in patients with end-stage CKD include the use of opioids and adjuvants, and adequate therapy should not be withheld due to fear of dependence.[14,15] According to the literature, psychomotor agitation and confusion can be effectively managed with a combination of agents such as haloperidol and benzodiazepines, while opioids - often administered intravenously, subcutaneously, or transdermally - remain the cornerstone of pain control. Dyspnea may be alleviated with oxygen or other physical measures, bronchodilators, furosemide, and a combination of low-dose opioids and short-acting benzodiazepines, such as midazolam, to reduce respiratory effort.[16] These recommendations align with the pharmacological strategies adopted in this study, contributing to improved symptom control and patient comfort. Notably, after RRT withdrawal, no patient developed acute pulmonary edema or required urgent dialysis for symptom relief. Survival after RRT withdrawal in this study was consistent with published data. However, palliative care involvement was generally late, with most patients already dependent and/or experiencing altered consciousness (PPS ≤ 30%) at the time of first contact. Consequently, RRT withdrawal and the final days of life occurred in all patients in an inpatient setting—an outcome that is not inevitable. When appropriately planned, and if by patient and family preferences, RRT withdrawal and end-of-life care for patients with advanced CKD can take place at home, ideally within a structured Palliative Care programme.[16] Given that the primary aim of palliative care is to prevent and relieve suffering in the context of serious and life-threatening illness, early integration of these services into CKD management could enhance patient participation in decisions regarding the initiation or discontinuation of RRT, prevent

therapeutic overreach, and improve quality of life for both patients and families, while also contributing to reduced healthcare costs.

Our findings highlight that the majority of patients were referred to palliative care only during the index hospitalization, often after significant clinical deterioration, with very few patients having received outpatient palliative care follow-up before RRT withdrawal. This pattern reveals a gap in the early integration of palliative care for patients with advanced CKD. In Portugal, specialist palliative care is delivered through a tiered network that includes hospital-based Palliative Care Units that provide inpatient beds and intensive symptom management, intra-hospital consultation teams supporting patients admitted under other specialties, and community and home-based palliative care services that ensure continuity of care, support for families, and care within the patient's own environment. Within this framework, the early initiation and continuous involvement of palliative care in advanced CKD- especially when considering the withdrawal of renal replacement therapy emerges as a feasible and ethically imperative strategy. Such integration can optimise symptom control, support shared decision-making, respect patient and family values, and better align care trajectories with patients' goals and preferences.

CONCLUSION

The decision to withdraw RRT represents a highly complex clinical and ethical moment, requiring a multidisciplinary, individualised, and patient-centred approach. The limited participation of patients in this process and the short period of follow-up by palliative care teams highlight the urgent need for timely referral and early integration of these teams into the trajectory of CKD. Indeed, palliative care can and should be applied throughout the continuum of the disease- from symptom control at various stages to comprehensive end-of-life care.[17]

Previous Presentations

Oral presentation at the XI National Congress of Palliative Care and II International Congress of the APCP.

Ethical Disclosures

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JGC: Conception and design; data collection, results analysis and writing the first draft.

JR: Conception and design; data collection, results analysis and revision.

EG: Conception, design and revision.

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