

Comprehensive Nursing Practice for a Patient with Uremia Complicated with Inflammatory Myopathy and Multisystem Complications

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Abstract

This case report describes comprehensive nursing care for a 69-year-old woman with uremia requiring regular hemodialysis, dermatomyositis, dysphagia, lower-limb weakness, electrolyte disturbances, cardiac insufficiency, nutritional risk, and high infection risk. Dynamic assessment identified seven priority problems involving fluid and electrolyte balance, cardiac and respiratory function, infection, nutrition and aspiration, treatment pathways, falls, pressure injury, venous thrombosis, and psychosocial support. Nursing interventions integrated hemodialysis and continuous renal replacement therapy, plasmapheresis, immunosuppressive and antiviral treatment, cardiac and respiratory monitoring, PICC and nasogastric-tube care, enteral nutrition, pressure-injury and thrombosis prevention, health education, and multidisciplinary coordination. During hospitalization, vital signs remained generally stable, selected renal, electrolyte, muscle, liver, and nutritional indicators improved, and no catheter-related infection, fall, deep vein thrombosis, significant bleeding, aspiration event, or new pressure injury occurred. Sacral redness did not progress, and the patient and family demonstrated improved understanding and treatment cooperation before discharge. This single case suggests that a dynamic, multidisciplinary nursing pathway may help coordinate competing risks in complex uremic patients with inflammatory myopathy; the findings cannot establish causal effectiveness and require validation in larger case series.

Keywords: Uremia; Dermatomyositis; Inflammatory Myopathy; Multisystem Complications; Nursing Care; Case Report

1. Background

Uremia requiring dialysis and inflammatory myopathy can produce interacting renal, muscular, respiratory, cardiac, nutritional, and psychosocial problems. Dysphagia and muscle weakness increase aspiration and malnutrition risk, while dialysis, immunosuppression, invasive lines, and prolonged bed rest increase risks of infection, fluid imbalance, falls, pressure injury, and venous thrombosis [1–3]. A single-system nursing model is therefore insufficient for patients whose treatment pathways may compete with one another.

This case report summarizes a coordinated nursing pathway for a patient with uremia complicated by dermatomyositis and multisystem complications. It emphasizes repeated risk assessment, communication across specialties, safe delivery of complex treatments, and transitional care. The report was prepared with reference to the CARE approach for case reports.



2. Case Presentation

2.1. Patient History and Diagnosis

A 69-year-old woman was admitted to the Department of Rheumatology and Immunology on October 14, 2025, because of progressive weakness in both lower limbs for 8 months and dysphagia for 4 months. Renal insufficiency had been diagnosed in October 2023, after which an arteriovenous fistula was created and regular hemodialysis was started three times weekly. From February 2025, she developed lower-limb weakness, slurred speech, drooling, inability to hold her neck upright, and weight loss from 52 to 45 kg. Dysphagia, dry mouth, and pruritus developed in June 2025.

Her medical history included hypertension, diabetes mellitus, hypothyroidism, long-term dialysis, and vascular-access problems. The primary diagnoses were uremic-stage chronic renal failure and inflammatory myopathy, clinically consistent with dermatomyositis. Additional findings included anemia, cardiac insufficiency with pericardial effusion, electrolyte and acid-base disturbances, bilateral bronchitis with subsegmental atelectasis and small pleural effusions, abnormal liver markers, nutritional risk, hypercoagulability, and positive cytomegalovirus testing.

2.2. Baseline Assessment and Treatment

Admission laboratory testing showed creatinine 724.6 $\mu\text{mol/L}$, urea 31.58 mmol/L, estimated glomerular filtration rate 4.54 mL/(min $\cdot$ 1.73m²), potassium 5.54 mmol/L, sodium 127.4 mmol/L, phosphorus 1.54 mmol/L, arterial pH 7.223, hemoglobin 107 g/L, albumin 34.7 g/L, creatine kinase 537 U/L, CK-MB 50.7 ng/mL, BNP 400.5 pg/mL, fibrinogen 5.58 g/L, and D-dimer 1.09 mg/L FEU. Imaging showed cerebral small-vessel disease, pulmonary and pleural abnormalities, pericardial effusion, atherosclerosis, and bilateral renal atrophy.

Treatment included methylprednisolone, mycophenolate mofetil, intravenous methylprednisolone sodium succinate, ganciclovir for CMV positivity, antimicrobial and gastric-protection therapy, antihypertensive treatment, enteral nutrition through a nasogastric tube, intravenous albumin, regular hemodialysis, multiple continuous renal replacement therapy sessions, and three plasmapheresis sessions. A PICC was inserted on October 21, 2025, for long-term intravenous treatment and nutritional support. These interventions required close coordination of volume status, cardiac tolerance, infection surveillance, and line safety [4,9].

3. Nursing Assessment and Problem Identification

The patient was admitted by wheelchair with persistent blood pressure above 180 mmHg and required level-one nursing care with continuous cardiac monitoring. Her Barthel Index was 30, indicating severe dependence. The fall or bed-fall risk score was 50, Padua score was 4, NRS2002 score was 4, and Braden score was 13. A 4 cm $\times$ 3 cm area of sacral redness was present on admission. GAD-7 and PHQ-9 scores were 2 and 4, respectively, although bedside observation identified mild nervousness, fatigue, poor appetite, and treatment-related negative emotions. Seven priority problems were identified: excess fluid and electrolyte disturbance; decreased cardiac output; impaired gas exchange; imbalanced nutrition with dysphagia; infection risk during immunosuppression and catheter use; risk of falls, pressure injury, and venous thrombosis; and deficient knowledge with mild negative emotional manifestations.

4. Nursing Interventions

4.1. Dynamic Monitoring and Organ Support

Heart rate, rhythm, blood pressure, respiratory rate, oxygen saturation, consciousness, symptoms, intake and output, weight, and treatment tolerance were monitored. Observations were intensified before and after hemodialysis, CRRT, plasmapheresis, fluid administration, and antihypertensive adjustment. Electrolytes, blood gas, renal function, muscle and cardiac markers, liver function, coagulation indicators, and blood counts were reviewed for early changes. Oxygen therapy, deep breathing, effective coughing, assisted turning, and secretion clearance were provided for pulmonary and respiratory-muscle risks. During CRRT, circuit patency, pressure, filter condition, ultrafiltration, replacement-fluid volume, and bleeding signs were recorded. Volume removal was adjusted in coordination with renal and cardiac tolerance [4,9].

4.2. Infection and Treatment-Pathway Safety

Because of corticosteroid and immunosuppressive therapy, CMV positivity, possible pulmonary infection, and multiple invasive devices, infection prevention was a central priority. Hand hygiene and aseptic technique were used for PICC, CRRT-line, nasogastric-tube, oxygen, infusion, and oral care. Temperature, respiratory symptoms, puncture sites, skin folds, oral mucosa, blood counts, and liver and kidney function were monitored. Antiviral and antimicrobial treatment was observed for infusion reactions, myelosuppression, and other adverse effects citeref7.

The PICC was checked daily for fixation, exposed length, patency, redness, swelling, pain, or exudate. CRRT lines were protected from kinking, compression, clotting, and accidental removal. Nasogastric-tube position was verified before feeding; residual volume, regurgitation, choking, diarrhea, and abdominal discomfort were observed. The head of the bed was elevated during and after feeding to reduce aspiration risk. These measures followed evidence-based principles for safe enteral feeding and catheter care [5].

4.3. Nutrition and Complication Prevention

Enteral nutrition was adjusted gradually according to swallowing function and gastrointestinal tolerance. Small, frequent feeds, residual-volume monitoring, aspiration precautions, and coordination with the nutrition team were used to address weight loss, low albumin, dialysis-related nutrient loss, and dysphagia. Nutritional support is particularly important in dialysis patients at risk of protein-energy wasting [8].

Fall prevention included bed rails, non-slip footwear, supervised transfers, family accompaniment, and assistance with all activity. An air mattress, regular repositioning, clean and dry bedding, skin inspection, and moisture control were used for pressure-injury prevention. Sacral redness was monitored closely. Lower-limb skin temperature, color, swelling, pain, and pulses were checked; ankle-pump and passive range-of-motion exercises were provided when tolerated, and pharmacological or mechanical prophylaxis was administered as ordered. Pressure-injury prevention and graded rehabilitation were coordinated with nutrition and mobility goals [6, 10].

4.4. Education, Psychological Support, and Multidisciplinary Care

Nurses explained the purposes and precautions of dialysis, CRRT, plasmapheresis, immunosuppressants, antivirals, antihypertensives, enteral nutrition, and catheter care using clear language and repeated demonstrations. The patient and family were instructed not to stop or change medication without medical advice and were taught to monitor weight, fluid intake, edema, blood pressure, swallowing tolerance, catheter sites, and warning symptoms.

Although formal scales did not show significant anxiety or depression, nurses addressed fear, fatigue, and treatment uncertainty through daily communication, emotional support, and family involvement. Nephrology, rheumatology, nutrition, rehabilitation, and nursing teams exchanged information and coordinated changes in volume management, feeding, activity, and line care. A multidisciplinary approach is relevant to continuity and patient-centered care in complex chronic kidney disease [11, 12].

5. Outcomes and Follow-up Plan

During hospitalization, vital signs remained generally stable and no uncontrollable cardiac or respiratory event occurred. Selected creatine kinase, potassium, phosphorus, liver-function, and acid-base indicators improved, while electrolyte disturbances were partly corrected. Enteral nutrition was delivered without aspiration. No catheter-related infection, fall or bed fall, deep vein thrombosis, significant bleeding complication, or new pressure injury occurred; sacral redness did not progress. The patient and family showed better understanding of treatment and nursing priorities, and treatment cooperation improved.

Before discharge, education covered medication adherence, dialysis and volume monitoring, enteral feeding and aspiration warning signs, PICC or nasogastric-tube observation, skin protection, safe activity, ankle exercises, and follow-up. The plan included reassessment of medication adherence, nutrition, dialysis status, skin condition, mobility, and caregiver needs at 3 months. The record did not include a standardized long-term functional outcome, so the inpatient results should be interpreted cautiously.

6. Discussion

The main challenge in this case was the interaction of renal replacement therapy, inflammatory myopathy, cardiac and respiratory compromise, dysphagia, immunosuppression, and multiple treatment pathways. Volume removal had to be balanced against hypotension and cardiac intolerance. Immunosuppression and CMV positivity required infection surveillance. Dysphagia and weight loss required nutritional support without aspiration. PICC, CRRT, and nasogastric tubes created simultaneous risks of infection, occlusion, dislodgement, and feeding-related complications.

The nursing response was organized as a repeated assessment-identification-intervention-reassessment loop. Objective scores, laboratory results, vital signs, treatment tolerance, skin findings, and family feedback were reviewed together. This allowed the team to adjust monitoring and activity according to changes in circulation, respiratory status, nutrition, and cognition. The absence of recorded nursing-related adverse events and the patient's stable treatment cooperation suggest practical value, but the result cannot be attributed to nursing care alone because medical treatment, disease course, and multidisciplinary management also contributed.

This report has several limitations. It is a single case without a control group, so it cannot establish causal effectiveness or generalizability. Rehabilitation was limited during the period of critical illness, some education was concentrated near discharge, and psychological and family outcomes were based mainly on observation and verbal feedback rather than repeated standardized measures. Future cases should use standardized functional, swallowing, quality-of-life, and caregiver-burden outcomes and should report longer follow-up.

7. Conclusion

For patients with uremia complicated by dermatomyositis and multisystem risks, a coordinated nursing pathway based on dynamic assessment, treatment-pathway safety, nutritional and aspiration prevention, infection control, anticipatory complication prevention, family education, and multidisciplinary communication may support safe completion of complex treatment. Larger case series are needed to evaluate reproducibility.

Author Contributions

Xinyu Yan and Feifei Chen jointly contributed to the case analysis, nursing assessment, intervention design, literature review, and manuscript preparation. Both authors reviewed and approved the final manuscript.

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Data Availability

The de-identified case information is not publicly available because of patient privacy and ethical restrictions, but may be made available by the corresponding author upon reasonable request and subject to appropriate approval.

Ethics Statement

Written informed consent for participation and follow-up was obtained from the patient and her family. The case report was conducted in accordance with the ethical requirements of the participating institution.

Conflict of Interest

The authors declare no conflict of interest.

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Figures and Tables

Table 1. Disease Timeline

Time	Stage	Key events
October 2023	Renal insufficiency	Arteriovenous fistula creation and regular hemodialysis started.
February 2025	Neuromuscular symptoms	Lower-limb weakness, dysarthria, drooling, neck weakness, and weight loss developed.
June 2025	Swallowing symptoms	Dysphagia, dry mouth, and pruritus appeared.
October 14, 2025	Admission	Uremia, dermatomyositis, multisystem dysfunction, nutritional risk, and high infection risk assessed.
October 2025	Complex treatment	Hemodialysis, CRRT, plasmapheresis, immunosuppression, antiviral therapy, PICC care, and nasogastric feeding provided.
Before discharge	Transition	Vital signs stable, adverse-event prevention completed, and family education provided.

Table 2. Key Admission Findings and Nursing Priorities

Domain	Key finding	Nursing priority
Renal and acid-base	Creatinine 724.6 μ mol/L; eGFR 4.54; pH 7.223	Coordinate dialysis or CRRT, intake-output, and volume assessment.
Electrolytes	K 5.54 mmol/L; Na 127.4 mmol/L; phosphorus 1.54 mmol/L	Monitor ECG, consciousness, symptoms, and treatment response.
Cardiac and respiratory	BNP 400.5 pg/mL; pericardial effusion; pleural effusions and atelectasis	Monitor circulation, oxygenation, dyspnea, and fluid tolerance.
Nutrition and swallowing	Albumin 34.7 g/L; NRS2002 score 4; weight 52 to 45 kg	Provide safe enteral nutrition and aspiration prevention.
Mobility and skin	Barthel 30; fall score 50; Padua 4; Braden 13; sacral redness	Prevent falls, pressure injury, and venous thrombosis.
Infection and treatment pathways	CMV positivity; immunosuppression; PICC, CRRT, and NG tube	Use aseptic care and monitor for catheter and systemic infection.

Table 3. Core Nursing Problems, Interventions, and Outcomes

Nursing problem	Main intervention	Observed outcome
Fluid, electrolyte, and cardiac instability	Dynamic vital-sign, ECG, laboratory, intake-output, dialysis, and CRRT monitoring.	Vital signs stable; selected indicators improved.
Infection and line safety	Hand hygiene, aseptic PICC/CRRT/NG care, antiviral and antimicrobial observation.	No catheter-related infection recorded.
Dysphagia and malnutrition	Gradual NG feeding, residual monitoring, head elevation, and nutrition-team coordination.	Feeding tolerated without aspiration.
Falls, pressure injury, and thrombosis	Supervised mobility, air mattress, repositioning, skin checks, ankle exercises, and prophylaxis.	No fall or DVT; sacral redness did not progress.
Education and emotional support	Repeated explanations, family participation, medication teaching, and discharge planning.	Treatment cooperation and family understanding improved.