

# The Role of Nephrology in Critical Care

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To the Editor,

Acute kidney injury (AKI) is a frequent complication among critically ill patients and is associated with increased morbimortality and prolonged intensive care unit (ICU) length (1). Given the growing complexity of these patients, multidisciplinary intensive care team is essential for individualized patient approach. Herein, we report a case that highlights the importance of the intensive care nephrology team.

A 65-year-old man was admitted to the hospital with cough, fever, and hypoxemia. He had normal blood pressure (115/76 mmHg), respiratory distress signs, and bilateral crackles in lung auscultation. The initial investigation is described in table 1. Antibiotic and crystalloid fluids were promptly initiated, however the patient developed respiratory failure and severe non-oliguric AKI (pCr/urea 5.66/201 mg/dL), with metabolic acidosis, hyponatremia and hyperphosphatemia.

He was admitted in the ICU, started high-flow nasal cannula and furosemide perfusion to achieve a negative fluid balance, which improved respiratory failure, but kidney function deteriorated (pCr/Urea 8.0/301 mg/dL). Although preserved urinary output, renal replacement therapy (RRT) was required. Given the rapid progression of AKI, without oliguria/anuria or hemodynamic instability, the intensive care nephrology team recommend the exclusion of other etiologies of AKI, beyond acute tubular necrosis (ATN). Further investigation revealed elevated IgG (5158 mg/dL) and the protein and urinary electrophoresis revealed a monoclonal band of IgG/kappa and elevated kappa free light chains. The bone marrow biopsy confirmed the diagnosis of multiple myeloma. While still in the ICU, the patient began dexamethasone and Bortezomib, with full recovery of kidney function at discharge.

Kidney disease in the ICU is a wide spectrum, that starts with increased susceptibility of AKI and might end in RRT (2, 3). The AKI in critical care is more than a marker of the patient's mortality; it is an active contributor to the death process. Understanding the factors contributing to AKI is crucial for the differential diagnosis of ATN and evaluation of urine sediment or proteinuria provide significant information (4). The intensive care nephrology team plays a vital role, assisting in early diagnosis, kidney recovery, and reducing the risk of progression to chronic kidney disease (CKD). They help identify nephrotoxic medications, aid in drug dosing, or avoid complications of AKI. Moreover, when RRT is needed, the prescription should be discussed or provided by the nephrologist, allowing an individualized prescription on the type of RRT, blood flow, rate of ultrafiltration or type of anticoagulation (1, 4, 5). Even in the vascular access, the nephrologist promotes the spare vascular patrimony, especially in the CKD and end-stage kidney disease (ESKD) patients.

In our center, the intensive care nephrology team is responsible for the majority of RRT prescriptions and provide daily adjustments of ultrafiltration or dialysate concentration according to patient progress. The knowledge in intensive medicine is growing, and it's difficult to remain fully updated in every subspecialty. Combining the different points of view will help to understand better the complex syndrome of acute kidney disease.

In our case, the rapid evolution of the severe AKI, with tubular dysfunction and proteinuria, were “red flags” to the intensive care nephrology team and a multidisciplinary approach allowed an earlier diagnosis and treatment.

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**Table 1.** Initial diagnostic investigation at the emergence department

Blood test		Urinalysis		Imaging test	
Hemoglobin	10.3 g/dL	Urine sediment	10-25 erythrocytes/camp	Renal ultrassond	Normal size kidneys, no obstruction
Lymphopenia	900 cels/uL	Protein-creatinine ratio	2.7 g/g crea	Chest x-ray	Bilateral pneumonia
C-reactive protein	460 mg/dL				
Plasma creatinine	1.80 mg/dL				
Plasma urea	80 mg/dL				

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