Profile of Hemodialyzed Patients with Renal Insufficiency at Bab el Oued University Hospital

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Abstract

Hemodialysis emergencies are common and pose a threat to the prognosis of patients. We receive patients with acute renal failure requiring dialysis sessions daily at the Bab el Oued University Hospital Center. Through this study, we aimed to delineate the clinical, biological, etiological, and evolutionary profile of these patients in order to adapt and improve their management in collaboration with various stakeholders. This was a longitudinal, descriptive study conducted at the hemodialysis center of the Bab el Oued University Hospital, between December 2018 and November 2019, including patients with acute renal failure requiring one or more hemodialysis sessions. In addition to demographic data, the collected information included: source institution, medical history, acute or chronic renal involvement and its etiology, indication for dialysis, vascular access, and evolution.

During this period, we provided 1621 hemodialysis sessions involving 250 patients, 162 with acute renal failure (ARF) and 88 with chronic renal failure (CRF). We included the 88 patients with ARF and excluded those with CRF. The mean age was 59 years with a range of 10 to 94 years. There were 66% males and 34% females, with a male-to-female ratio of 1.93. Approximately 39% of patients were hypertensive, 32% were diabetic, and 26% had mainly urological neoplasms. Our patients came from various departments of the Bab el Oued University Hospital in 66% of cases and from other institutions in 34% of cases. As for etiologies, we identified 68% tubulointerstitial nephropathies, 17% obstructive nephropathies, 10% glomerular nephropathies, and 5% vascular nephropathies. Regarding dialysis indications, uremic syndrome accounted for 39% of cases, hyperkalemia for 33%, acute pulmonary edema for 14%, acidosis for 11%, and urgent transfusion for 3% of cases. Vascular access consisted of femoral catheters in 77% and jugular catheters in 23% of cases. The outcomes were complete recovery in 14%, partial recovery in 20%, transfer to chronic dialysis in 8%, death in 35%, and loss to follow-up in 23%. The morbidity and mortality...
among patients undergoing emergency dialysis remain high despite the availability of dialysis and improvements in renal failure management in Algeria. We should work more collaboratively with various stakeholders and strive to computerize patient records to be more responsive and better track and manage these patients with high morbidity and mortality.

Introduction
In cases of acute kidney injury (AKI), the indication for dialysis is unquestionable in certain situations such as severe metabolic acidosis, life-threatening hyperkalemia, fluid overload with pulmonary edema resistant to medical treatment, and symptomatic major azotemia. Extrarenal clearance (ERC) is indicated to correct metabolic disorders, ensure survival under the best conditions, and preserve the potential for renal function recovery [1-3]. We receive patients daily at the Bab el Oued University Hospital (CHU) with acute renal failure requiring emergency hemodialysis, which threatens their prognosis. Through this study, we aimed to identify the clinical, biological, etiological, and evolutionary profile of these patients to adapt and improve their management in collaboration with various stakeholders [2,4].

Material and Methods
This is a longitudinal, descriptive, single-center study conducted at the hemodialysis center of Bab el Oued University Hospital (CHU) between December 2018 and November 2019. The study population consisted of patients with acute kidney injury (AKI) requiring dialysis, who were referred by various departments of CHU Bab el Oued and other public healthcare facilities. All patients with AKI, regardless of age, requiring one or more sessions of hemodialysis, were included in the study. Patients with end-stage chronic kidney disease (CKD) were excluded. The variables studied included age, sex, department or originating healthcare facility, medical history, acute or chronic kidney injury and its etiology, indication for dialysis, vascular access, laboratory tests (creatinine level, urea level, blood electrolytes, complete blood count), and patient outcomes (complete or partial recovery, dialysis orientation, and mortality).

Results
From December 2018 to November 2019, we conducted 1621 hemodialysis sessions involving 250 patients. We included 88 patients with AKI and excluded 162 with CKD. In our population of acute renal failure patients, the mean age was 59 years, ranging from 10 to 94 years. There were 66% men and 34% women, with a male-to-female sex ratio of 1.93. Patients were referred from various departments of CHU Bab el Oued in 66% of cases and from other healthcare facilities in 34% of cases. Among patients from CHU Bab el Oued, the main contributing departments were the emergency department and the nephrology department, each accounting for 29%, followed by the intensive care unit (26%), urology (10%), internal medicine (3%), and thoracic surgery (2%). For external patients, the main referring facility was CHU Mustapha (50%), followed by Birtraria Hospital (12.5%), CNMS (8%), and other facilities with 4% each: CPMC, El Kettar Hospital, Koubia Hospital, Douera Hospital, Ait Idir Hospital, Castors Hospital, and Boussaâda Hospital. The most common medical history included hypertension in 39% of cases, diabetes in 32%, and urological neoplasms in 26%. The etiologies of patients were predominantly tubulointerstitial nephropathies (68%), followed by obstructive nephropathies (17%), glomerular nephropathies (10%), and vascular nephropathies (5%). Regarding dialysis indications, uremic syndrome accounted for 39% of cases, hyperkalemia for 33%, acute pulmonary edema for 14%, acidosis for 11%, and urgent transfusion for 3%. Vascular access was mainly provided by femoral catheters (77%) and jugular catheters (23%). Outcomes included complete recovery in 14% of cases, partial recovery in 20%, dialysis orientation in 8%, death in 35%, and loss to follow-up in 23%. According to the literature, dialysis orientation in AKI exceeds 10%, and 19 to 30% experience partial recovery and are followed for CKD. We observed that deceased patients were mainly from the intensive care unit (39%), emergency department (25%), and nephrology department (7%), predominantly due to aggressive vasculitis. The age group most affected by death was patients between 70 and 80 years old (24%), with patients over 60 years old accounting for 52%. A significant mortality rate of 45 to 70% for hospital-acquired AKI and in the intensive care unit is reported in the literature. Risk factors for AKI mortality in the intensive care unit include the need for mechanical ventilation, associated organ failures, underlying chronic comorbidities, acidosis, oliguria, and age. Regarding loss to follow-up, 45% were from the emergency department, 15% from the intensive care unit, 20% from CHU Mustapha, and 10% from the urology department, highlighting the need for more coordination and feedback.

Discussion
The predominance of patients from the emergency department at CHU Bab el Oued as the main referring service can be explained by the necessary evaluation and presentation of external patients through the emergency department to the relevant departments. For external patients, CHU Mustapha is the main
referring facility, likely due to its proximity to CHU Bab el Oued and its provision of hemodialysis services during off-hours when the latter does not [5-7]. Other facilities without hemodialysis services transfer their patients to our hospital. Regarding dialysis indications, uremic syndrome accounted for the highest proportion of cases (39%), followed by hyperkalemia (33%), acute pulmonary edema (14%), acidosis (11%), and urgent transfusion (3%). All vascular access was provided via catheters (100%) since the study population comprised entirely of AKI patients. The predominance of femoral catheters (77%) can be attributed to contraindications for jugular catheterization in cases of hyperkalemia and acute pulmonary edema, as well as coagulation disorders. In our study, dialysis orientation was 8%, compared to 10% in the literature, and partial recovery was observed in 20%, consistent with the literature range of 19 to 30%. International studies report a significant mortality rate of 45 to 70% for hospital-acquired AKI and in intensive care units. Our study recorded a mortality rate of 35%, with a loss to follow-up rate of 23%. Deceased patients were primarily from the intensive care unit (39%), emergency department (25%), and nephrology department (7%), mainly due to aggressive vasculitis. The most affected age group was patients between 70 and 80 years old (24%), with patients over 60 years old accounting for 52%. Risk factors for AKI mortality in intensive care units include the need for mechanical ventilation, associated organ failures, underlying chronic comorbidities, acidosis, oliguria, and age [8,9]. Regarding loss to follow-up, 45% were from the emergency department, 15% from the intensive care unit, 20% from CHU Mustapha, and 10% from the urology department, indicating the need for better coordination and feedback.

**Conclusion**

Despite improvements in care in Algeria and technological innovations, mortality remains high due to the aging population, the multitude of causes, and their association with other visceral failures. We should work more collaboratively with various stakeholders and strive to computerize patient records to be more responsive and better manage patients with high morbidity and mortality.

**References**


