

Epidemiological, Clinical, and Evolutionary Aspects of Severe Obstructive Acute Renal Failure Requiring Dialysis in the Nephrology Department of the University Hospital of Brazzaville

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Received: 13 Feb, 2024 | Accepted: 28 Feb, 2024 | Published: 06 Mar, 2024

Citation: Mahoungou GH, Dimi Nyanga Y, Eyesi Sinomono DT, Mouss RB, Gandzali Ngabé É, et al. (2024) Epidemiological, Clinical, and Evolutionary Aspects of Severe Obstructive Acute Renal Failure Requiring Dialysis in the Nephrology Department of the University Hospital of Brazzaville. *Int J Nephrol Kidney Fail* 10(1): dx.doi.org/10.16966/2380-5498.245

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Abstract

Introduction: Obstructive anuria represents a medical and surgical emergency, sometimes necessitating immediate extrarenal replacement therapy. Our study aims to delineate the profile of hemodialyzed patients with obstructive acute renal failure (OARF), detailing indications for hemodialysis and observing the course of the condition.

Patients and Methods: This retrospective study covers the period from 2019 to 2022, encompassing all patients with OARF requiring emergency dialysis at the Nephrology Department of the University Hospital of Brazzaville. Data analysis was performed using EPI Info software version 3.3.2 (CDC, Atlanta, USA).

Results: The study involved 39 patients, with 69.23% being male. The average age was 58.10 years, and oliguria was the primary presenting symptom (82%). Tumoral obstruction accounted for 76%, while lithiasic obstruction constituted 14%. Two cases of retroperitoneal fibrosis were observed (2.8%). Neoplastic origins included prostate, bladder, cervical, and rectal cancers in 46.67%, 33.33%, 16.67%, and 3.33% of cases, respectively. Indications for hemodialysis were poorly tolerated uremia, acidosis, hyperkalemia, and pulmonary edema in 79.1%, 38.57%, 19.49%, and 13.21% of cases, respectively. The mortality rate was 25.64%.

Conclusion: The reliance on hemodialysis in obstructive anuria underscores a delay in patient management. Emergency treatment revolves around urinary tract drainage, followed by addressing the underlying cause. Prevention hinges on early and adequate management of various causal pathologies.

Keywords: Renal failure; Obstruction; Prostate; Epidemiology

Introduction

Obstructive Acute Renal Failure (OARF) is a medical and surgical emergency characterized by an abrupt disturbance in glomerular filtration secondary to the obstruction of urinary excretory pathways, leading to tubulointerstitial lesions. OARF accounts for 2 to 10% of cases of acute renal failure [1]. Its management requires urgent urinary drainage, sometimes resorting to instrumental measures. However, it continues to pose significant challenges in healthcare facilities with limited technical resources, particularly in developing countries. Diagnostic delays, the severity of clinical presentation, and delays in initial management expose individuals to complications of renal

failure, sometimes necessitating a return to extrarenal replacement therapy [2].

Approximately 16.4% of patients with OARF require replacement therapy. The initiation of dialysis varies greatly depending on the clinical situation of the patients [2,3]. The severity lies in the reduced ability of the kidneys to fulfill their sodium excretion functions, leading to a risk of sodium and water retention and acute pulmonary edema, with a potential threat of life-threatening hyperkalemia.

In the Congo, a study published in 2021 in the Urology Department of the University Hospital of Brazzaville revealed a proportion of

nearly 4% of patients presenting with OARF, with a 13% lethality likely attributable to a dialytic emergency [4].

A more thorough monitoring of patients admitted for OARF will make a significant contribution to preventing complications associated with OARF and improving the functional and vital prognosis of patients. Hence, the importance of conducting such a study, which has the general objective of describing the epidemiological, etiological, and evolutionary aspects of patients with severe OARF at the University Hospital of Brazzaville.

Patients and Methods

This was a retrospective cross-sectional descriptive study conducted using patient records from those hospitalized for OARF at the nephrology department of the University Hospital of Brazzaville between 2019 and 2022. The study was conducted entirely in Brazzaville, an urban area. This choice was justified by the presence of the largest hospital centre housing the country's only nephrology department, where dialysis patients are managed.

The study population included patients of both sexes and all ages diagnosed with OARF. The inclusion criteria comprised patients presenting with:

- Acute pulmonary edema
- Severe metabolic acidosis
- Major uremic syndrome
- Life-threatening hyperkalemia

Patients with incomplete or non-exploitable medical records were excluded.

The variables studied were:

- Sociodemographic: gender, age, education level, marital status, and socio-professional status
- Clinical: mode of admission, medical and surgical history, and etiology
- Evolutionary: recovery or non-recovery of renal function, death

Statistical Analysis

Data were collected using a survey form and entered into Excel 2016® software. Data analysis was performed using EPI Info software version 3.3.2 (CDC, Atlanta, USA). Qualitative variables were expressed as percentages, and quantitative variables as means and standard deviations.

Results

The study sample consisted of 27 men (69.23%) and 12 women (30.77%), with a gender ratio of 2.25. The mean age was 58.10 ± 6.77 years, ranging from 36 to 75 years. Oliguria was the most common discovery circumstance in 82% of cases. Table 1 illustrates the discovery circumstances of OARF.

The type of the obstruction was predominantly tumoral (76.92%). Table 2 highlights the etiologies of OARF.

The neoplastic origin consisted of prostate, bladder, cervical, and rectal cancers in 39.24%, 37.97%, 19%, and 3.79% of cases, respectively.

The various indications for hemodialysis were poorly tolerated uremia (79.1%), acidosis (38.57%), hyperkalemia (19.49%), and pulmonary edema (13.21%).

Table 1: Discovery Circumstance.

	N=39	
	n	%
Oliguria	32	82,05
Altered consciousness	4	10,26
Asthenia	2	5,13
Hematuria	1	2,56

Table 2: Causes of OARF.

	N=39	
	n	%
Tumoral	30	76,92
Lithiasis	5	12,82
Stenosis of the distal ureter	2	5,13
Retroperitoneal fibrosis	1	2,56
Neurogenic bladder	1	2,56

The average creatinine level was 1844 ± 817 $\mu\text{mol/L}$ (range: 241 to 5345 $\mu\text{mol/L}$).

Therapeutically, the average number of dialysis sessions to address the emergency was 3.34 ± 1 , with a range of 1 to 8 HD sessions. Peridialytic complications were mainly symptomatic arterial hypotension in 46 cases (35.38%), hypoglycemia in 11 cases (8.46%), and muscle cramps and chest pain in 1 case (0.77%).

Obstacle removal was performed subsequently by percutaneous nephrotomy in 30 cases (76.93%), suprapubic catheterization in 6 cases (15.38%), and bladder catheterization in 3 cases (7.69%).

In terms of evolution, 61.54% of cases progressed towards normalization of renal function (n=24), 25.64% (n=10) towards death, and 12.82% (n=5) towards chronicity.

Discussion

This study aimed to describe the epidemiological, etiological, and evolutionary aspects of severe obstructive acute renal failure at the University Hospital of Brazzaville.

The average age of the patients was 58.1 years, with a range from 36 to 75 years. These results are similar to those obtained in Douala and Bamako, which presented average ages of 50 ± 18 years and 60 ± 6 years, respectively [5,6].

The average age found in our study is lower than the 77 years observed in Europe, likely due to the aging population [7]. This can be explained by the predominance of prostate tumors, as they are the major contributors to lower urinary tract obstruction. Furthermore, our study, with a male-to-female sex ratio of 2.25, reflects the findings of most studies conducted in Africa, highlighting a male predominance. However, other authors have noted a female predominance, specifically in Madagascar [8]. During our study, oliguria was the main discovery circumstance. In Khalil F, et al. [9] study, conducted in a nephrology department, anuria was the primary reason for consultation.

The etiologies are dominated by tumor-related pathologies (76.92%), and stones (12.82%) in our study. These findings are comparable to the series reported by Moussa Tondi ZM, et al. [10] accounting for 72% of benign prostatic hyperplasia and urinary stones at 11%; and those in the series by Kassogué A, et al. [11] which reports 52% benign prostatic hyperplasia and 17% urinary stones as the main etiologies of OARF.

Cervical cancers are among the gynecological neoplastic causes (16.67%) of OARF identified in our series. This aligns with the findings of Rakotomena SD, et al. in Madagascar [8]. For these authors, the high frequency of cervical cancer discovered at the stage of complications was the cause of OARF.

The mortality rate of 25.64% observed in our series may be explained by delayed diagnosis and, consequently, delayed appropriate management. However, it is lower than those reported in the series by Coulibaly in Côte d'Ivoire and Halle in Cameroon, where they were 29.23% and 22%, respectively [6]. In their study, Guerrot D, et al. indicate that obstructive acute renal failure is generally reversible, and the recovery of renal function depends on the early restoration of urinary tract patency [7]. Our study suggests, on the one hand, that further complementary and analytical studies should be conducted to document the evolution of patients who have been treated for OARF. On the other hand, it emphasizes the importance of implementing screening and early management measures for prostate or cervical tumors to prevent the occurrence of OARF.

The limitations of the current study are related to records collected in a single department, which is not representative of all patients with OARF at the University Hospital of Brazzaville. The cross-sectional nature of the study and the small sample size limits the scope of the conclusions.

Conclusion

These findings underscore the importance of prompt diagnosis and intervention in OARF cases, emphasizing the need for early recognition of obstructive etiologies and timely initiation of extrarenal replacement therapy. Further studies and collaborative efforts are warranted to enhance our understanding of OARF and to explore potential strategies for improving outcomes in these critically ill patients.

Conflict of Interest

None.

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