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Emergency Hemodialysis at the Sylvanus Olympio University Hospital Center in Lomé

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Abstract

In our context in Togo, the diagnosis of renal failure seems late. Patents were most often hemodialyzed in a clinical situation of vital distress due to threatening hyperhydration, hyperkalemia, acidosis, pericarditis or confusion of uremic origin. This is why we initiated this study: to update data on emergency hemodialysis situations. Method: This was a cross-sectional and descriptive study with retrospective collection of data over a period of 24 months from January 1, 2022 to December 31, 2023 in medical intensive care units, multipurpose intensive care units and in the medical emergency unit of the CHU-SO. Results: The frequency of performing emergency hemodialysis is estimated at 55.24%. The most common reasons for admission were repeated nausea and vomiting at 21.55% and asthenia at 19.82% (**Figure 2**). The main signs observed on admission were dyspnea, edematous-ascitic syndrome in 13.73%, and anuria in 11.76%. Renal failure was chronic in 68.97% of patients and acute in 31.03% of cases. The main indication for emergency hemodialysis was poorly tolerated uremia (48.45%); uremic encephalopathy (15.55%); acute lung edema (APO) in 13.58%; threatening hyperkalemia (13.42%) and anuria of 24 hours or more (9%). Emergency hemodialysis was carried out within the first six hours in 7.75% of patients after its indication. The clinical evolution of patients after emergency hemodialysis was favorable in 69.83% and unfavorable in 30.17%. Conclusion: It would be interesting to conduct a prospective study on the socio-economic factors linked to the performance of hemodialysis in order to improve access to hemodialysis in the various hospital centers in Togo.

Keywords

Emergency Hemodialysis, Lomé, Togo

1. Introduction

Hemodialysis is a method of renal replacement. It consists of extracorporeal blood purification which allows the elimination of uremic toxins in patients with renal insufficiency [1]. It is a proven therapy in the management of severe acute [2] [3] or chronic end-stage renal failure. It is an alternative to other replacement techniques such as peritoneal dialysis and kidney transplantation [4].

Emergency hemodialysis or "emergency dialysis start" according to the REIN register (Epidemiology and Information Network in Nephrology) in France is defined as "a first session of hemodialysis or dialysis carried out immediately within 24 hours after a first evaluation by a nephrologist, an emergency physician or an intensivist due to a life-threatening risk resulting from threatening hyperhydration, hyperkalemia, severe acidosis, pericarditis or encephalopathy of uremic origin without excluding acute decompensation despite early treatment" [5]. In our context in sub-Saharan Africa where the diagnosis is often late, the term emergency hemodialysis is used each time it is carried out within 24 hours in a person with renal insufficiency due to threatening hyperhydration, hyperkalemia, acidosis, pericarditis or confusion of uremic origin without excluding acute decompensation despite early treatment [2].

Several studies around the world have focused on emergency hemodialysis with different results [2], notably in France in 2011 where the REIN registry estimated the incidence of dialysis patients at 144/million inhabitants [5]; in Tunisia in 2018 where the use of emergency dialysis was 43.6% [6] and in Senegal where it was estimated at 15.18% in 2013 [2].

In Togo, studies were carried out, notably on the epidemiological, etiological and progressive profile of acute renal failure (AKI) at the Sylvanus-Olympio University Hospital of Lomé in 2019 which was estimated at 12.2% of the number of patients having been treated by emergency dialysis [7].

Emergency hemodialysis at the Sylvanus Olympio University Hospital is a daily experience for the specialist or general practitioner and a situation of both psychological and economic distress for the patient; it seems useful to update the data on the emergency hemodialysis situation.

Specifically, it was about:

1) Describe the socio-demographic, clinical and paraclinical profile of patients who received emergency hemodialysis;

2) Describe the indications for emergency hemodialysis;

3) Describe the evolution of patients after emergency hemodialysis.

2. Study Framework and Method

2.1. Study Framework

The study took place in the medical emergency unit, the medical intensive care unit and the multipurpose intensive care unit of the Sylvanus OLYMPIO University Hospital Center in Lomé, Togo (CHU-SO). The CHU-SO is, according to the health pyramid, a level 3 reference center. It has five major departments: Medicine and medical Specialties; Surgery and surgical specialties; Gynecology and obstetrics; Pediatrics;

and Diagnostic assistance (the laboratory and the radiology and imaging department).

2.2. Study Method

This was a cross-sectional and descriptive study with retrospective collection of data over a period of 24 months from January 1, 2022 to December 31, 2023 in the medical intensive care units, the multipurpose intensive care unit and in the emergency unit medical emergencies at CHU-SO.

We included in the study all medical records of hospitalized patients found in the department archives and having:

- Age 18 and over during our study period;
- A renal biological exploration;
- Carried out the first hemodialysis session in an emergency situation.

Not all files of patients who did not have renal biological exploration and/or who performed hemodialysis outside of an emergency situation were included in the study.

Concerning the collection, we first consulted the registers of the departments of the medical emergency unit, medical intensive care unit and multipurpose intensive care unit and selected the medical files of cases of renal pathologies from these departments. We documented these medical files and retained files that had benefited from hemodialysis in emergency situations. The data was collected using a pre-established survey form after reading the files.

The variables studied were:

- Sociodemographic data;
- Clinical data: comorbidities and pathological history, lifestyle, functional signs, duration of progression, general signs and physical signs, regular or irregular medical follow-up;
- Paraclinical data: biological and imaging data;
- Treatments received;
- Indications and location of the first dialysis session (public or private);
- Evolving data: evolving modalities, output mode.

Statistical analysis of the data was carried out with KoBoCollect software version 2.024.12. Processing was done with Word, Microsoft Excel version 2021 and Jamovi 1.6.3 software. The Chi^2 test was used for the comparison of qualitative variables and the One-Way ANOVA, Godness of Fit tests were used for the comparison of quantitative variables. The significance threshold was set at 5%.

2.3. Operational Definitions

Some operational definitions related to our study:

- Renal failure: is defined by a reduction in GFR which corresponds to an impairment of renal function. Depending on whether the alteration is sudden (< 3 months), we have an AKI or progressive (>3 months), a CKD. The other elements of the chronic nature of renal failure were mentioned in the presence of

anamnestic criteria (previous history of high creatinine levels, known general illnesses), morphological criteria (reduction in the size of the kidneys on renal ultrasound) and/or biological criteria (hypercreatininemia with GFR<60 ml/min, normochromic normocytic anemia, hypocalcemia, hypophosphatemia).

➢ Indications for the first emergency hemodialysis:

- Uremia > 2g/l with or without encephalopathy (confusion, asterixis).
- Poorly tolerated uremia.
- Threatening hyperkalemia: serum potassium > 7.5 mmol/L with associated electrocardiographic signs.
- Anuria evolving for 24 hours defined by diuresis < 100 ml/24 h.
- Acute pulmonary edema refractory to diuretic treatment and/or with Oligo-anuria (diuresis < 400 ml/24 h).

Blood ionogram standards:

- Natremia: this is the level of sodium in the blood. Its normal value is [135 - 145 mmol/l].
- Chloremia: this is the level of chloride in the blood. Its normal value is [95 - 105 mmol/l].
- Kalemia: this is the level of potassium in the blood. Its normal value is [3.5 - 5 mmol/l].
- Calcemia: this is the calcium level in the blood. Its normal value is [90 - 105 mmol/l].
- Phosphoremia: this is the level of phosphorus in the blood. Its normal value is [25 - 45 mmol/l].

3. Results

3.1. Epidemiological Data

Hospital prevalence

During the study period, 210 cases of kidney failure patients at the dialysis stage were identified, including 120 in medical intensive care, 25 in multipurpose intensive care and 65 in medical emergencies. Among these files, 116 met the inclusion criteria of the study, i.e., a frequency of performing emergency hemodialysis estimated at 55.24%.

This frequency is related to the different services in the study (Table 1).

Table 1. Distribution of patients according to services.

	Effective	Percentage
Medical resuscitation	61	52.59
Multipurpose resuscitation	10	8.62
Medical emergency unit	45	38.79

3.2. Socio-Demographic Data

The average age of the patients was 45.08 years with extremes of 18 and 80 years. The

most represented age group was [52 - 68 years] at 37.07% for 43 patients (Figure 1).

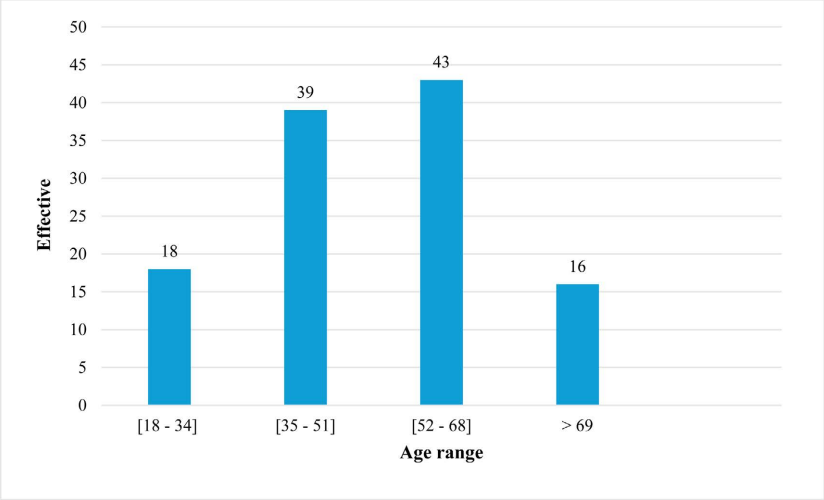

Figure 1. Distribution of patients according to age groups.

Men were represented at 61.21% and women at 38.79% for a sex ratio of 1.58 men to women.

Patients in 84.48% (98) did not have health insurance.

3.3. Clinical Data

The most common reasons for admission were repeated nausea and vomiting at 21.55% and asthenia at 19.82% (Figure 2). The main signs observed on admission were: dyspnea, edematous-ascitic syndrome in 13.73%, anuria in 11.76%.

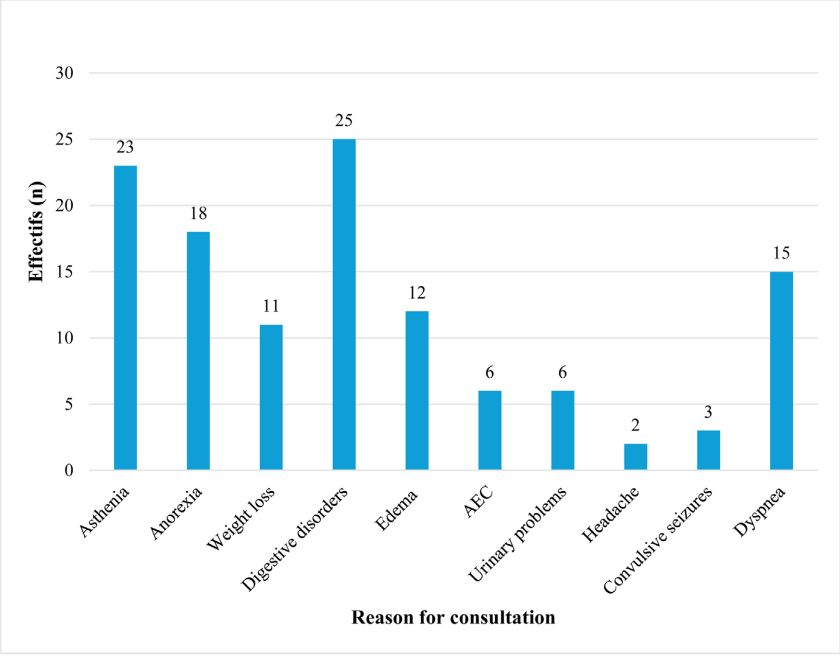

Figure 2. Distribution of patients according to reason for consultation (N = 30).

3.4. Background

Arterial hypertension (HTA) represented 49.14% of the history (Table 2).

Table 2. Distribution of patients according to history.

	Effective	Percentage
HT	57	49.14
IRC	37	31.90
Diabetes	40	34.48
HIV	8	6.89
Dilated cardiomyopathy	7	6.03
Prostate cancer	4	3.45
Urethral stenosis	1	0.86
Polycystic kidney disease	1	0.86

The risk factors for kidney disease were represented by: Alcohol at 33.62%, taking infusions 24.14%, self-medication 14.66%, tobacco 10.34% and a sedentary lifestyle at 3.45%.

The most used anti-hypertensive medications before admission were (Table 3).

Table 3. Distribution of patients according to their previous treatments.

	Effective	Percentage
Calcium channel blocker (CAI)	30	25.86
Enzyme-converting enzyme inhibitor (ACEI)	17	14.66
Diuretic	37	31.90
Non-insulin antidiabetic	8	6.90
Insulin anti-diabetic	6	5.17
Anti-retro-viral treatments (ART)	6	5.17

3.5. Type of Renal Failure and Associated Pathologies

Renal failure was chronic in 68.97% of patients and acute in 31.03% of cases. The associated signs and pathologies were mainly alteration of general condition, anemic syndrome and alteration of consciousness (Table 4).

3.6. Paraclinical Data

3.6.1. Serum Creatinine

The average was 172.79 ± 71 mg/l with extremes of 84 and 724 mg/l. The range of [123 - 223 mg/l] was the most represented in 43.97% (51) of patients (Table 5).

Table 4. Distribution of patients according to signs associated with kidney disease.

	Effective	Percentage
Alteration of general condition	99	85.34
Anemic syndrome	92	79.31
Altered state of consciousness	62	53.45
Respiratory distress syndrome	48	41.38
Heart failure	39	33.62
Pulmonary condensation syndrome	23	19.83
Behavioral disorder	15	12.93
Chest pain	15	12.93
Pleural effusion	10	8.62
Dehydration	10	8.62
Sensory-motor deficit	9	7.76
Ascites	6	5.17

Table 5. Distribution of patients according to the value of their serum creatinine in mg/l.

	Effective	Percentage
[84 - 154]	45	38.79
[155 - 225]	51	43.97
[226 - 296]	12	10.34
>297	8	6.90
Total	116	100.0

3.6.2. Glomerular Filtration Rate

The glomerular filtration rate in patients with chronic renal failure was less than 15 ml/min/kg/m^2 in 78.45% of patients (**Table 6**).

Table 6. Distribution of patients according to glomerular filtration rate.

	Renal disease stage	Effective	Percentage
<15	Stade 5/ESRD	63	78.75
15 - 29	Stade 4	17	21.25
30 - 59	Stade 3	0	0.00
60 - 89	Stade 2	0	0.00
≥90	Stade 1	0	0.00

3.7. Blood Count

- Hemoglobin

The average hemoglobin level was 8.04 g/dl with extremes of 3 and 14 g/dl.

Anemia was noted in 91 patients. This anemia was microcytic in 34 patients, normocytic in 47 patients and macrocytic in 10 patients.

- Leukocytes

Hyperleukocytosis and leukopenia were found respectively in 25.86% and 8.62% of our patients and 87.5% of the latter were predominantly polynuclear neutrophils.

- Platelets

Thrombocytopenia and thrombocytosis were found in 8.62% and 3.45% of patients respectively.

3.8. Serum Calcium and Phosphorus

Hypocalcemia was found in 55.17% of patients and hyperphosphatemia was found in 50.00% of patients (Table 7).

Table 7. Distribution of patients according to serum calcium and phosphorus (N = 116).

	Values	Effective	Percentage
Calcemia mg/l			
<90	Hypocalcemia	64	55.17
90 - 105	Normal	30	25.86
>105	Hypercalcemia	20	17.24
Not carried out	-	2	1.73
Total		116	100.0
Phosphoremia mg/l			
<25	Hypophosphatemia	17	14.66
25 - 45	Normal	37	31.90
>45	Hyperphosphatemia	58	50.00
Not carried out	-	4	3.44
Total	-	116	100.0

3.9. 24-Hour Proteinuria

The average proteinuria was 899.96 mg/24 h with extremes of 208.8 mg/24 h and 2010.12 mg/24 h; 55% of proteinuria was between 200 and 1000 mg; 40% between 1000 and 2000 mg; 5% were greater than 2000 mg.

3.10. Renal Ultrasound (N = 30)

Renal atrophy was the most represented at 66.67% among patients. In 30% of

cases, the size of the kidneys was normal and was increased in 3.33%.

3.11. Etiology of Renal Failure

Severe malaria and prostate cancer were the main causes of AKI respectively at 8.62% and 3.45%; organic and infectious causes were the main etiologies of AKI respectively at 4.31% and 1. 72%.

Arterial hypertension and HIV were the main etiologies found in CKD in 8.62% and 6.89% of patients respectively (Table 8).

Table 8. Distribution of patients according to the etiology of renal failure.

	Effective	Percentage
Acute kidney injury (AKI)		
Organic IRA		
Severe post-malaria	10	8.62
Probable toxic origin	2	1.72
Postpartum hemorrhage	2	1.72
Malignant hypertension	3	2.58
Obstructive AKI		
Prostate cancer	4	3.45
Urethral stenosis	1	0.86
Chronic kidney failure (CKD)		
Chronic glomerulonephritis	46	39.65
HT	10	8.62
Diabetes	4	4.31
HIV	8	6.89
Polycystic kidney disease	1	0.86
Undetermined	11	9.4

❖ **Complications of kidney failure**

- **Functional and uremic complication**

Anuria was found in 5.17% of patients. Urea was greater than 3 g/l in 39.66% of patients; it was between [2.1 - 3 g/l] in 32.76% of patients and between [0.46 - 2 g/l] in 27.58% of patients. Altered consciousness was found in 72.42% of these patients.

- **Acute pulmonary edema**

Acute lung edema (APO) was found in 34.48% of patients.

- **Ionic disorders**

Mean serum potassium of 6.37mmol/l ± 2.1 with extremes of 1.79 and 8.17 mmol/l. Threatening hyperkalemia greater than or equal to 7.5 mmol/l was found in 25.86% of patients (Table 9).

Table 9. Distribution of patients according to blood ionogram (N = 116).

	Effective	Percentage
Natremia: Na^+		
<135	48	41.38
[136 - 145]	39	33.62
>146	27	23.28
Total	116	100.00
Chloremia: Cl^-		
<95	42	36.21
[96 - 105]	58	50.00
>106	16	13.79
Total	116	100.00
Kaliemia: K+		
<3	13	11.21
[3.1 - 5]	45	38.79
[5.1 - 6.5]	28	24.14
>6.6	30	25.86
Total	116	100.00

3.12. Therapeutic Data

3.12.1. Indications for Emergency Hemodialysis

The main indication for emergency hemodialysis was poorly tolerated uremia (48.45%); uremic encephalopathy (15.55%); acute lung edema (APO) in 13.58%; threatening hyperkalemia (13.42%) and anuria of 24 hours or more (9%).

3.12.2. Practical Modalities of Hemodialysis Sessions Carried out in Emergency

Emergency hemodialysis was performed within the first six hours in 7.75% of patients after its indication (Figure 3). The average number of sessions was 3.5 with extremes of 1 and 7 sessions in our hemodialysis patients. The centers carrying out the first emergency dialysis session were private centers in 80.34% and the CHU-SO hemodialysis center in 19.66%. The approach used was the jugular route in 56.03% and the femoral route in 43.97%.

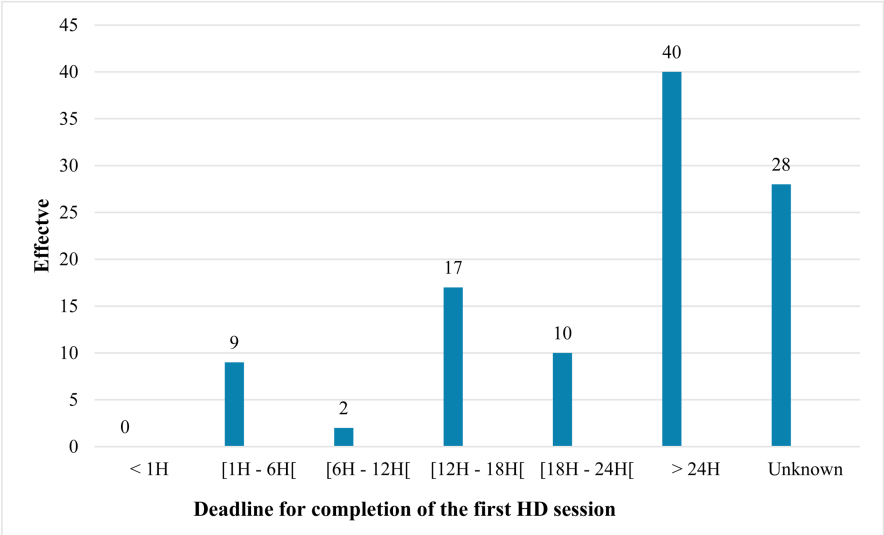

Figure 3. Distribution of patients according to the time taken to complete the first emergency hemodialysis session.

3.13. Adjuvant Treatments

Solutes based on isotonic saline (SSI) and diuretics in general were more widely used at 73.28% (Table 10).

Table 10. Distribution of patients according to adjuvant treatments received.

	Therapeutic class	Effective	Percentages
SSI	Crystalloids	85	73.28
SGI		42	36.21
Lactic ringer		1	0.86
Furosemide	Diuretics	85	73.28
Nicardipine	Calcium channel blocker	13	11.21
Ceftriaxone	3G cephalosporins	40	34.48
Amoxicillin clavulanic acid	Betalactams	25	21.56
Paracetamol	Analgesics	73	62.93
Enoxaparin	HBPM*	62	53.45
Oxygen therapy	Blood products	16	13.79
Red blood cells		57	49.14
Fresh plasma		10	8.62

*Low molecular weight heparin.

3.14. Scalable Data

3.14.1. Clinical and Paraclinical Evolution

The clinical evolution of patients after emergency hemodialysis was favorable in

69.83% and unfavorable in 30.17%. The OAP declined to 91.25%.

Paraclinically, uremia was greater than or equal to 2 g/l in 46.55% of patients after the first hemodialysis session. Serum sodium, serum chloride and serum potassium had normalized respectively in 34.48%; 55.17%; 51.72% of cases.

3.14.2. Patient Outcome after Hemodialysis

After the hemodialysis sessions, 39.66% of patients were released. The recorded death rate was 37.07%. The causes of death were sudden death and septic shock in 46.51% and 20.93% of patients, respectively.

3.14.3. Correlations between Indications for Hemodialysis and the Occurrence of Death

Poorly tolerated uremia and hyperphosphatemia were linked to the occurrence of death with respectively (P-value of 0.01; P-value of 0.03).

4. Discussion

4.1. Strengths, Limitations and Biases of Our Study

Our study has strengths, limitations and biases to take into account for a proper interpretation of the results.

The main strength of our study is that it is the first of its kind to be carried out in an emergency, intensive care and resuscitation department in Togo.

The limitations were: the study framework, the poor conservation and maintenance of medical records on the one hand and the lack of many additional examinations necessary for the proper monitoring of patients over time. The study setting was monocentric and therefore could not be generalized to the entire Togolese population.

4.2. Epidemiological Data

Hospital prevalence

Out of a total of 210 emergency hemodialysis patients, 116 met the inclusion criteria for a hospital prevalence of 55.24%.

This prevalence was higher than that of Selly *et al*. in Senegal which was 40.68% in 2020 [2] and lower than that of Didier *et al*. in Ivory Coast which was 68.54% [8] in 2020. This high prevalence rate could be explained by the fact that the CHU SO is the reference hospital with the only public hemodialysis center.

4.3. Clinical Data

4.3.1. Background

They were dominated by high blood pressure at 49.14% followed by diabetes at 34.48%. Non-dialysis CKD at 28.48% then HIV infection at 6.89%.

These results were similar to those of Ilboudo *et al*. in Burkina Faso in 2021 in whom hypertension, diabetes and CKD were respectively at 46.15%, 4.62% and 15.38% [9]. Didier *et al*. in Ivory Coast in 2020 found hypertension, CKD and HIV at 63.9%, 24% and 6.68% respectively [8].

This rate of CKD patients not on dialysis in our study could be explained by the high cost of treatment and/or the non-accessibility of dialysis centers in our regions. To this we could associate the refusal or non-acceptance of the illness in certain cases.

4.3.2. Clinical Signs and Associated Pathologies

In our study the most frequent clinical signs in the different departments were: alteration of general condition 85.34% in medical emergencies, alteration of consciousness 53.45% and respiratory distress syndrome 41.38 % in medical intensive care and multipurpose intensive care.

These results were different from those of Didier *et al*. in whom hypertensive emergencies 64.3%, and neurological disorders 30.1% were the most represented [8]. This could be explained by the delay in consultation, poor follow-up and late initiation of hemodialysis. Some patients are resigned to the high cost of hemodialysis and refuse this treatment. Therefore, they are only taken care of in cases of vital distress.

4.3.3. Kidney Diseases and Their Etiologies

Chronic renal failure (68.97%) was more represented in our study and acute renal failure was 31.03%.

These results were similar to those of Didier *et al*. in 2020 in whom: the CRI was 75.3% and the AKI 24.6% [8]; Rovamalala *et al*. in Madagascar had higher results with the CRI which was 82.7% [10]. Chronic kidney disease in sub-Saharan Africa progresses silently to become severe and terminal, explaining the discovery sometimes with complications requiring immediate recourse to hemodialysis. Systematic screening seems necessary.

The main causes were: high blood pressure at 8.62% and HIV (HIVAN) at 6.89% were the main causes of CKD. These results were consistent with those of Didier *et al*. [8] in Ivory Coast in 2020 where chronic glomerulonephritis (CNG) was the main cause of CKD and those of Selly *et al*. in Senegal in 2020 where nephroangiosclerosis was the main cause at 25.2% [2]. This could be explained by the high rate of history of hypertension and HIV at 49.14% and 6.89% respectively in our study.

4.3.4. Indications for Emergency Hemodialysis

In our study, the main indication for emergency hemodialysis was poorly tolerated uremia (48.45%); uremic encephalopathy (15.55%); acute lung edema (APO) in 13.58%; threatening hyperkalemia (13.42%) and anuria of 24 hours or more (9%).

These results varied from one study to another. Thus Lazrak *et al*. in Morocco in 2011 found a predominance of hyperkalemia (58%) and hyperazotaemia (49.9%) [8]; Selly *et al*. [2] in Senegal in 2020 found uremia poorly tolerated (50.47%) and hyperkalemia threatening (40.19%). For Amékoudi *et al*. in northern Togo in 2022 [11], these indications were dominated by uremic encephalopathy at 74.19%.

This difference in results in our study can be explained by the predominance of

CKD cases not on dialysis due to lack of financial means or refusal to accept the disease, the delay in consultation of our patients who come to admission with a GFR < 15 ml/min associated with signs of uremic intoxication and other complications of CKD on the one hand, and on the other hand the lack of dialysis centers in other regions outside Lomé; patients from these regions therefore came to Lomé at a late stage.

4.3.5. Vascular Access

The central venous catheter (jugular 56.03% and femoral 43.97%) was the most used vascular access. This trend was similar in the series of Rova Malala *et al*. at 100% [10], Didier *et al*. at 97.2% [8], and Selly *et al*. at 91.5% [2]. These results were consistent with clinical practice where in the context of the urgency of performing hemodialysis, the possible vascular access remains central venous catheterization. Creating an arteriovenous fistula requires planned surgical intervention.

4.3.6. Mortality after Hemodialysis

Death was recorded in 37.07% of patients and appears to be very high. This mortality in our context would be related to the late stage of admission of patients with very urgent hemodialysis indications such as cardiogenic OAP, threatening hyperkalemia and uremic encephalopathy. The mortality of hemodialysis patients according to the DOPPS study remains high despite technical progress [4]. This is linked to the vulnerability of patients with renal failure in whom multiorgan failure seems to set in early, putting life at risk. It would be wise for the authorities to require the installation of dialysis units in emergency departments for rapid treatment of these patients.

5. Conclusions

We conducted a descriptive cross-sectional study with retrospective data collection (**Appendix**) on emergency hemodialysis cases at the Sylvanus Olympio University Hospital Center from 2022 to 2023 in the medical emergency, medical intensive care and multipurpose intensive care units.

The hospital prevalence of emergency hemodialysis remains high. The age group of 42 - 53 was the most represented. Clinically and paraclinically, hypertension and diabetes were the most frequent comorbidities. The glomerular filtration rate was mostly less than 15 ml/min, altered consciousness and cardiogenic OAP associated syndromes. Chronic Glomerulonephritis was one of the main etiologies found. The rate of completion of hemodialysis within six hours was low in our study.

It would be interesting to conduct a prospective study on the socio-economic factors linked to the performance of hemodialysis in our environments and to improve access to hemodialysis in the various hospital centers in Togo.

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Conflicts of Interest

No conflicts.

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Appendix

Data collection sheet

I) Socio-demographic index

Entry date ……/Exit date ……

How old are you:……years

1) [18 - 34] □

2) [35 - 51] □

3) [52 - 68] □

4) >69 □

what is your gender ? M □ F □

Are you married □ single □ widowed □ divorced □

What is your profession?.....

Civil servant □ Trader □ Retired □

Craftsman □ Pupil/Student □

s there health insurance ? Yes □ No □

II) Reason for admission to CHU SO

Is this a consultation ? Yes □ No □

If yes what are the reasons for the consultation? □

1) Asthenia 2) Anorexia 3) Digestive disorders 4) Urinary disorders

5) weight loss 6) Dyspnea 7) Generalized edema 8) Convulsive crisis

other signs……

Is this a reference to the CHU SO? Yes □ No □

What is the reason for referral? ……

Other modes of admission?……

III) Do you have any history?

Chronic renal failure? Yes □ No □

De diabetes? yes □ no □

HT yes □ no □

Sickle cell disease yes □ no □

HIV/AIDS yes □ no □

Lifestyle: Alcohol □ Tobacco □ Infusion □ Self-medication…

Others……

Current treatments

IEC □ ICA □ diuretic □ ADO

Insulin □ T-ARV □

Other drugs…….

Notion of previous dialysis before admission to the CHU?

Yes □ No □

If yes, how many sessions? ……

How often?.....

1) Diagnosis of renal failure

Value of the patient's blood creatinine?...……mg/l

a) <8 □ b) [8 - 12] □ c) [13 - 83] □ d) [84 - 154] □ e) [155 - 225] □

f) [226 - 296] □ g) >297□

What is the value of the glomerular filtration rate in……ml/min/1.73m²?

a) >90 □ b) [60 - 89] □ c) [30 - 59] □ d) [29 - 15] □ e) <15 □

Type of renal failure: IRA or CRI

- Start < 3 months □ >3 months □
- Renal ultrasound
- Normal size □

Abnormal size □ [Atrophy…...? others =……?

- Hémoglobin level ……g/dl

VGM=……. fl TCMH=…… pg CCMH=……..%

- Anémia mild □ moderate □ Severe □
- Leukocyte Rate…… 10^9/L
- Platelet rate ……10^9/L
- Calcemia en mg/l

a) <90 □ b) [90 - 105] □ c) >105 □

- Phosphoremia en mg/l

a) <25 □ b) [25 - 45] □ c) >45 □

- Blood ionogram

Natremia (Na+) = ……. mmol/l

a) <135 □ b) [135 - 145] □ c) >145 □

Kaliemia (K+) = ……mmol/l

a) <3 □ b) [3.1 – 4.9] □ c) >5 □

Chloremia (CL-) = …… mmol/l

a) <95 □ b) [95 – 105] □ c) >105 □

24-hour proteinuria =……ml/24h

Albuminuria = …….

- Other associated signs

OMI □ AEG □ Ascites □ State of anasarca □ Hematuria □

- Conclusion

IRA □ IRC □

1) Uremic complication (uremic encephalopathy)?

Uremia rate ……g/l

a) <0.15 □ b) [0.15 – 0.45] □ c) [0.46 - 2] □ d) [2 - 3] □ e) >3 □

Consciousness: altered □ clarity □

Other associated signs ……

2) Anuria

Acute urinary retention yes □ no □

Diuresis = …….

a) <100 ml/24H □ b) >100 ml/24H □

Other associated signs ……

3) Acute lung edema

Clinical arguments

a) Acute dyspnea + orthopnea □

b) Cough +/− salmon-colored foamy expectoration □

c) Edema of the lower limbs □

d) Tachycardia HR > 100 bpm □

e) Bradycardia? ……. □

f) SaO_2 < 90% □

g) Other signs …… □

h) Crackles □

4) Hyperkaliemia

Kaliemia rate(K+) ……. mmol/l

a) <3.5 □ b) > [3.5 - 4.5] □ c) [4.6 - 5.5] □ d) >5.6 □

Associated signs ……

Paraclinical examinations

- ECG

a) Normal □

b) Abnormal (rhythm disorder/conduction/LVH/sign of myocardial ischemia or Others……) □

c) Others □

- Chest X-ray

a) Normal □

b) Abnormal □

- Other exams

5) Treatments received

Drugs

SSI 500cc □ SGI 500cc □ RL 500cc □

Analgesics □ antispasmodics □ diuretics □

Antibiotics □ Anticoagulants □

Fresh blood packed □ red blood cells platelets □

Fresh plasma □ Oxygen therapy □

Others……

- Has hemodialysis been performed?

In which center?

At CHU-SO □ In private □

Date of completion…….

Deadline of completion after diagnosis ?

a) < 1 H □ b) [1 H – 6 H[□ c) [6 H – 12 H[□ d) [12 H – 24 H[□

e) [18 H – 24 H[□ f) > 24 H □

Approach used

a) Femoral route □

b) Jugular route □

c) Other ways…….

Number of sessions carried out …….

Frequency of completion ……...

6) Patient monitoring after dialysis

i) Clinical condition of the patient post-dialysis

TA = …… O = …….. Pulse =…….

FR= SaO_2= HR

Good general condition □ Altered general condition □

Normal consciousness □ Altered consciousness □

Other signs = ……..

ii) Biology

Creatinine value=…… mg/l

a) <8 □ b) [8 - 12] □ c) >12 □

Uremia value = ……. g/l

a) < 0.15 □ b) [0.15 - 0.45] □ c) >0.45 □

Blood ionogram

Natremia (Na+) = ……. mmol/l

a) < 135 □ b) [135 - 145] □ c) >145 □

Kaliemia (K+) = …… mmol/l

a) < 3 □ b) [3.1 - 4.9] □ c) >5 □

Chloremia (CL-) = …… mmol/l

a) <95 □ b) [95 - 105] □ c)> 105 □

Calcemia =……. mg/l

a) <90 □ b) [90 - 105] □ c) > 105 □

Phosphoremia = ……. mg/l

a) <25 □ b) [25 - 45] □ c) >45 □

Clinical evolution

a) Unchanged (general condition altered, / altered consciousness) □

b) In good evolution (good general condition) □

c) Very good evolution □

Future of the post-dialysis patient

a) Still in hospital □

b) Execution with external follow-up □

c) Death □

d) Discharge □

e) Lost from view/ Evacuated □

Cause of death recorded at the SO University Hospital?