Epidemiological Aspects of Chronic Renal Failure at Dipumba Hospital in the City of Mbujimayi/RD. Congo

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Abstract

Introduction: The objective of this study was to determine the prevalence, stages, diagnosis and evolution of chronic renal failure in the town of Mbujimayi and specifically at Dipumba Hospital. **Material and Methods:** This was a retrospective, descriptive and cross-sectional study, spanning a period of 6 years, *i.e.* from 01/01/2014 to 12/31/2019 at DIPUMBA hospital. The study involved 33 patients with CKD. **Results:** The hospital frequency was 1.22%. The age of our patients varied between 35 and 90 years with an average age of 58.2 ± 11.7 years. The age group most affected was that of 50 to 59 years in a proportion of 39.39%. Men were the most affected with 26 cases (78.79%) against 7 (21.21%) for women. The reasons for admission were dominated by oligo-anuria, digestive disorders, dyspnea and physical asthenia. Arterial hypertension, diabetes mellitus and acute renal failure were the antecedents found in the majority of our patients, *i.e.* in 90.91% respectively; 84.85% and 66.67% of cases. The majority of patients, 60.6%, had end-stage chronic renal failure. The healthy diet + medication was the most recommended treatment. The majority of cases, or 66.67%, resulted in stabilization against 33.33% of death cases. **Conclusion:** Chronic renal failure is a frequent pathology in our environment. It affects patients from their thirties, of both sexes. The majority of patients consult for oligo-anuria, digestive disorders, dyspnea and physical asthenia. High blood pressure and diabetes mellitus are the most common history. Most patients are admitted at the terminal stage. The lethality is quite high (33.33%).

1. Introduction

Chronic kidney disease (CKD) is a major public health problem in both developed countries and in countries in development paths [1]. His real extent in Africa, in the Democratic Republic of Congo (DRC) and Mbujimayi remains unknown [2].

It is a serious disabling pathology, constantly increasing and the treatment of which is particularly restrictive and expensive. It therefore represents a public health issue both from the point of view of management of the resources devoted to this pathology and in the preparation of patients who will require renal replacement therapy.

Most if not all kidney disease is progressive, although the rate of progression is extremely variable from one individual to another. Slow down the progression which is one of the major challenges of 21st century nephrology [3].

According to the WHO [4], kidney disease is described as the most neglected chronic disease. In 2015, nearly 600 million people, or 5% of the world's population, had chronic kidney disease. In some low-income countries, the inaccessibility of replacement therapy remains the great unresolved challenge today. In Africa, its exact prevalence according to some authors is better documented only in a few countries. In sub-Saharan Africa, this has been estimated at 13.9% [5]. In Côte d'Ivoire, it is 5.8% of patients admitted to hospital, of which 5% of patients have access to replacement therapy [6]. In the Democratic Republic of Congo, studies conducted on its prevalence in 2009 in the city province of Kinshasa estimated it at 12.4% and 19.8% [7] [8].

The modalities of the management of IRC were presented at the Quadrimed congress in 2013. Since then, interesting novelties have been published and will be the subject of this update. Kidney disease is prevalent in 15% of the population according to US statistics. The causal diagnosis includes approximately 50% of diabetic and hypertensive patients. Chronic kidney disease is a notorious independent risk factor that increases exponentially with loss of kidney function; it is therefore of the utmost importance to slow down its progression in order to avoid the outcome of replacement therapy and to protect the patient from cardiovascular complications, whether fatal or not. In addition, the art of nephrological monitoring consists in controlling collateral disorders secondary to renal disease which may also participate in the progression of CRF.

Optimal treatment of arterial hypertension is certainly the most important con-

dition to consider in order to slow the progression of renal failure [9].

The recent SPRINT study published at the end of 2015, with a specific blood pressure measurement protocol (self-measurement in a standardized situation), demonstrated a reduction in cardiovascular morbidity and mortality in non-diabetic patients at high cardiovascular risk with a target value of systolic blood pressure less than 120 mmHg (mean 121.5 mmHg) in comparison with standard treatment aiming for a systolic pressure value below 140 mmHg (mean 134.6 mmHg) [10]. Unfortunately, the progression of renal failure could not be slowed down by the intensive diet with lower blood pressure values.

As hygieno-dietetic measures, it should be noted that the reduced salt intake makes it possible to better control arterial pressure (5 to 6 g of salt/day) and to reduce proteinuria; this is an important step to take in any patient with kidney failure. There are of course other measures to consider, such as stopping smoking and the fight against sedentary lifestyle. Finally, correcting hyperlipidemia is also important for reducing cardiovascular risk and possibly halting the progression of CRF [11].

Prevention of terminal CKD relies on a thorough knowledge of the risk factors that determine its frequency.

There are 2 levels of prevention of CRF:
- Primary prevention which aims to reduce the incidence of kidney disease.
- Secondary prevention aims to improve the quality of life or survival of treated patients and to reduce co-morbidities [12].

The present study reports the epidemiological aspects of chronic renal failure in the town of Mbujimayi and specifically at the Dipumba Hospital, which aspects will put the ears of practitioners on the need for early diagnosis, prevention and treatment. Good therapeutic orientation of patients.

In view of the problems posed by chronic renal failure, and its epidemiological aspects which are poorly understood in the general population, we proposed to carry out this work intended to determine the epidemiological aspects linked to chronic renal failure in our environment.

2. Material and Method

The study was carried out in the internal medicine department of the Dipumba Hospital located in the Kanshi Commune, Mbujimayi city, Kasai-Oriental Province, in the Democratic Republic of Congo. The study population consisted of all the patients who consulted the Dipumba internal medicine department during the study period and the sample drawn from this population was of simple random type consisting of 33 patients who were admitted for renal failure. chronic at Dipumba hospital. The method used in this study was retrospective, descriptive and cross-sectional, spanning a period of 6 years, *i.e.* from 01/01/2014 to 12/31/2019 at DIPUMBA hospital. To collect the data, we used a form which was used for this purpose and these data were encoded on a table in Microsoft Excel 2010 software and processed with the computer software Epi info Atlanta 7.1.1.14 CDC USA 2013. The data analyzed were then presented in tabular form.

3. Results

Table 1 shows us that during the study period, 2716 patients were admitted to the internal medicine department for various pathologies, of which 33 were for chronic renal failure, *i.e.* a prevalence of 1.21%.

Table 2 shows us that the incidence of IRC is growing between 2014 and 2019, with a non-significant regression in 2017, it evolved randomly.

Table 3 shows that the age of the patients varies between 35 to 90 years with an average age of 58.2 ± 11.7 years. The age group most affected was that of 50 to 59 years in a proportion of 39.39%.

As shown in Table 4, men were the most affected with 26 cases (78.79%) against 7 (21.21%) for women. The sex ratio was 3.71:1 in favor of men.

In Table 5, married people represented a high proportion, *i.e.* 63.64% of cases.

Table 6 shows that most of our patients, or 45.45%, resided in the commune of Bipemba.

Table 1. Distribution of cases according to hospital frequency of CRF.

Frequency	not	%
Chronic renal failure	33	1.21
Other pathologies	2683	98.78
Total	2716	100.0

Table 2. Distribution of cases according to the annual frequency of IRC.

Year	Total number	IRC case	%
2014	476	5	0.18
2015	570	7	0.26
2016	501	6	0.22
2017	437	4	0.15
2018	381	6	0.22
2019	351	5	0.18
Total	2716	33	1.21

Table 3. Distribution of CKD cases by age.

Age (year)	not	%
0 - 9	0	0
10 - 19	0	0
20 - 29	0	0
30 - 39	1	3.03
40 - 49	6	18.18
50 - 59	13	39.39
60 - 70	9	27.27
>70	4	12.12
Total	33	100

Table 4. Distribution of IRC cases by sex.

Sex	not	%
Men	26	78.79
Women	7	21.21
Total	33	100.00

Table 5. Distribution of IRC cases by civil status.

Civil status	not	%
Married	21	63.64
Widower widow	7	21.21
Divorcee)	4	12.12
Single	1	3.03
Total	33	100.00

Table 6. Breakdown of IRC cases by origin.

Origin	not	%
Bipemba	15	45.45
Kanshi	8	24.24
Dibindi	3	9.09
Diulu	3	9.09
Muya	2	6.06
Out of town	2	6.06
Total	33	100.00

In Table 7, the reasons for admission were dominated by oligo-anuria, digestive disorders, dyspnea and physical asthenia with respectively 69.69% each.

As shown in Table 8, arterial hypertension, diabetes mellitus and acute renal failure were the antecedents found in the majority of our patients with successively 90.91%; 84.85% and 66.67% of cases.

As shown in Table 9, the complete blood count revealed anemia (Hb < 7 g/dl) at 81.9%. The kidney ultrasound performed in our study revealed the kidneys to be 72.73% small.

Table 10 shows that the majority of patients, or 60.6%, had end-stage chronic renal failure. The following Table gives the distribution of patients according to the stage of chronic renal failure.

As shown in Table 11, the healthy diet + medication was the most recommended treatment in 100% of cases. Dialysis was required in 81.82% of cases. Table 12 shows breakdown of IRC cases according to evolution.

As shown in Table 13, the majority of patients, *i.e.* 54.55%, had a primary hospital stay less than or equal to 10 days.

Table 7. Breakdown of IRC cases by reason for admission.

Reasons for admission	N = 33	%
Oligo-anuria	23	69.69
Digestive disorders	23	69.69
Dyspnea	23	69.69
Physical asthenia	20	60.61
Dizziness	19	57.57
Nocturia	15	45.45
Polyuria	10	30.30
Coma	10	30.30
Weightloss	4	12.12

Table 8. Distribution of CKD cases by history.

Antecedents	N = 33	%
HTA	30	90.91
Diabetic sugar	28	84.85
Acute renal failure	22	66.67
Heart failure	19	57.58
Smoking	15	45.45
Dyslipidemia	12	36.36
Alcoholism	11	33.33

Table 9. Distribution of CKD cases according to the paraclinical report.

Paraclinical assessment	not	%
Anemia (Hb < 7 g/dl)	27	81.9
High urea	33	100
Elevated creatinine	33	100
Blood sugar		
High	28	84.85
Normal	5	15.15
Positive proteinuria	24	72.73
Hyperlipidemia		
Yes	16	48.48
No	17	51.52
Kidney ultrasound		
Normal kidneys	9	27.27
Small kidneys	24	72.73

Table 10. Distribution of CRF cases by stage of chronic renal failure.

IRC stage	not	%
Stage I	4	12.12
Stage II	9	27.27
Stage III	8	24.24
Stage IV	12	36.36
Total	33	100

Table 11. Distribution of IRC cases according to treatment.

Treatment	N = 33	%
Diet + medication	33	100
Reference for Dialysis	27	81.82

Table 12. Breakdown of IRC cases according to evolution.

Evolution	not	%
Stabilization/Reference	27	81.81
Death	6	18.18
Total	33	100

Table 13. Distribution of CKD cases according to the primary length of hospitalization.

Hospital stay	not	%
≤10 days	18	54.55
>10 days	15	45.45
Total	33	100

4. Discussion

4.1. Age

The age of our patients varies from 35 to 90 years with an average age of 58.2 ± 11.7 years. The age group most affected was that of 50 to 59 years in a proportion of 39.39%.

These results are almost similar to that found in France in 2007 [13], where 60% of patients were over 60 years old. A study conducted in Tunisia in 2004 [14] reported that 40% of patients were over 60 years old.

Different results have been reported by other African studies. In fact, in Burkina Faso the average age was 36 years [15]. In Senegal 43.6% of patients were under 46 years old [16]. In Côte d'Ivoire, 57.3% of patients under 45 were found [17]. Bourquia and Coll covered 55% of the patients that have between 30 and 40 years [18].

The observation that emerges is that the pathology can occur at any age depending on the etiology. The high frequency in this age group could be explained

by the hypothesis on the role of environmental factors, in particular smoking, alcoholism and occupational exposure in the onset and/or progression of renal pathologies.

4.2. Sex

Men were the most affected with 26 cases (78.79%) against 7 (21.21%) for women. The sex ratio was 3.71 in favor of men.

Comparable results to those found by Ahmed. [19], who had reported in his study 60% of male patients against 40% of the female sex, *i.e.* a sex ratio of 1.5 in favor of men.

A comparable trend was noted in Senegal, Ivory Coast, and Morocco, *i.e.* respectively for the same parameter 54.4%, 61.8%, 59% [20] [21] [22]. For Mehier P., Burnier M. and Pruijm M, [23], the inequality of sex in the face of renal insufficiency remains for the moment not very thorough in humans. Most of the data come from veterinary studies which have shown that the higher incidence of renal failure in men is due to the lack of protective effect of endogenous estrogens in addition in women to hyper vascularization of the renal tissue and the Ability of renal cells to renew themselves. On may also include IgA nephropathy is diagnosed in young adults worldwide, common in whites and Asians than blacks.

4.3. Reasons for Admission

The reasons for admission were dominated by oligo-anuria, digestive disorders, dyspnea and physical asthenia.

A study carried out in Bamako in 2001 found the same reasons [18].

On the other hand Ahmed [19], had found in his study that hypercreatininemia represented 70% of the reasons for admission.

In Côte d'Ivoire the most dominant reason for consultations was hypertension with 40.83%, followed by deterioration of the general condition with 12.23% [13].

4.4. History

Arterial hypertension, diabetes mellitus and acute renal failure were the antecedents found in the majority of our patients, *i.e.* in 90.91% respectively; 84.85% and 66.67% of cases. Ahmed [19] found that hypertension accounted for 52.6% of the medical history. A similar trend was observed in Senegal, 50.91% in favor of hypertension [20].

Hypertension is found as the most dominant antecedent, this demonstrates the importance of hypertension as an underlying factor in the occurrence of CRF. Hypertension and diabetes develop insidiously and induce cellular and microvascular damage without excluding the kidneys, often patients remain symptom-free for years. It is thus a diagnosis and an early assumption of responsibility is recommended.

4.5. Paraclinical

In our study, the blood count revealed anemia (Hb < 7 g/dl) in 81.9% of cases.

These results are close to those of Ahmed [19] who found in his study that 60.3% of cases had microcytic anemia, 42.7% had severe anemia with a hemoglobin level between 5 and 6.9 g/dl.

The kidney ultrasound performed in our study revealed the kidneys to be 72.73% small. Our data conform to international literature in that renal atrophy is often described in subjects with CRSD. It is the consequence of a decrease in the nephrotic capital which is the functional unit of the kidney.

A superimposable trend was reported by Kasadji [22], he found in 72.3% of cases small kidneys.

4.6. Stage of Chronic Renal Failure

The majority of patients, 60.6%, had end-stage chronic renal failure. The predominance of the terminal stage of CRF is explained by the delay in the management of Patients with CRF.

These results are similar to a study carried out in Senegal where the frequency of terminal CKD was 65.5% [21].

5. Conclusion

Chronic renal failure is a common pathology in our community. It affects patients from their thirties, of both sexes. The majority of patients consult for oligo-anuria, digestive disorders, dyspnea and physical asthenia. High blood pressure and diabetes mellitus are the most common history. Most patients are admitted at the terminal stage. The lethality is quite high (33.33%).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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