First Consultation in Nephrology: Case of the Point G University Hospital (Bamako-Mali)

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Abstract

Understanding the first consultation of people with kidney disease seems to us to be essential to understand the attitude of the referring physician and the nephrologist. The aim was to find out to whom a patient with kidney disease should be referred in the first instance and for what reason? Hence the evaluation of the prevalence of the first consultation in the nephrology department of the Point G University Hospital in Bamako was made. **Patients and Method:** This was a prospective descriptive study which took place from July 2017 to June 2018 in the nephrology department of the Point G University Hospital. The study included all patients who came to the nephrology department for the first time during this period. **Results:** Between July 2017 and June 2018 at the nephrology and haemodialysis service of the G point University Hospital, we retained 643 out of 1031 patients who came for their first consultation, *i.e.* 62.36%. There were many patients aged between 41 and 50 years. The average age was 42.6 ± 5.03 years with extremes of 30 and 82 years. The sex ratio (M/F) was in favor of males, 1.14. The majority of patients were referred/evacuated from the referral health centres (57.6%). The majority of patients were referred/evacuated by general practitioners (70.5%). Cardiologists were the main specialists to refer/evacuate patients (21.2%). The main reasons for consultation that led to the first diagnostic hypotheses were: arterial hypertension for vascular nephropathy, glomerular syndrome for glomerular nephropathy, acute uraemia syndrome for acute renal failure, hydronephrosis for obstructive uropathy and finally diabetes for diabetic nephropathy. **Conclusion:** The first consultation in nephrology remains an important step in the management of renal disease, especially when the referral is an emergency. The percentage of referrals is dominated by general practitioners.

1. Introduction

Understanding the first consultation of people with kidney disease seems to us essential for the attitude of the treating or referring physician and the nephrologist. The prognosis of the kidney or even life may depend on how quickly the patient is referred to the first consultation. Chronic kidney disease is a health problem [1], the current objectives in nephrology are to identify risk factors tending to deteriorate kidney function and to anticipate complications in order to limit or slow down the progression. The average lifespan is not the biologically normal lifespan, it is the socially normative lifespan [2]. The emergence of health networks is a complementary response to evaluate therapeutic management, allowing a link between institutional and community practices [3]. Studies in developed and developing countries have shown similar results. In Europe, approximately 68.7% of consultations were for chronic kidney disease [4]. In Black Africa, renal failure was the main reason for 52.1% of consultations [5]. In Togo, renal failure was the main reason for 73.2% of consultations. In the absence of data on the reasons for consultation in nephrology, the frequency of referring or treating physicians, we deemed it necessary to carry out this work, which was a first in our department. The objective is to evaluate the prevalence of first consultations in the nephrology department of the Point G University Hospital in Bamako and to determine the socio-demographic characteristics of patients who come for a first consultation, to identify the reasons for consultation and to identify the diagnostic hypotheses evoked.

2. Patients and Method

This was a prospective descriptive study that took place from July 2017 to June 2018 at the nephrology and haemodialysis department of the Point G University Hospital. The study involved all patients who came for the first time for consultation in the nephrology department during this period.

Included: All patients who came for the first time to the nephrology department's consultation rooms and who had given their informed consent.

Not included: Any former patient seen in consultation. Any new and/or old patient seen outside the study period. Any patient refusing to answer questions.

Data were collected using data sheets to assess the prevalence of primary consultations in the nephrology department of Point G University Hospital. Data were entered into SPSS software. Some operational definitions:

- Referral: is to direct a patient to a health service without the notion of emergency.

- Evacuation: is the extraction by means of transport of a sick person.
- Low socio-economic class: income of 500 XOF per day or 15,000 XOF per month.
- Middle socio-economic class: income of 1500 - 2000 XOF per day or 45,000 to 60,000 XOF per month.
- High socio-economic class: income of >5000 XOF per day or more than 150,000 XOF per month.

3. Results

Between July 2017 and June 2018 at the nephrology and haemodialysis department of the CHU du point G, we retained 643 out of 1031 patients who came for their first consultation, *i.e.* 62.36%.

There were many patients aged between 41 and 50 years. The average age was 42.6 ± 5.03 years with extremes of 30 and 82 years. The dominant age group was between 41 and 50 years (see Table 1 below).

Male patients were in the majority with a sex ratio (M/F) equal to 1.14. The majority of patients were married (83.6%) and 49.9% of patients did not attend school. Housewives represented the main socio-professional category. The majority of patients were referred/evacuated by general practitioners (70.5%). Cardiologists were the main specialists to refer/evacuate patients (21.2%).

The region that referred the most was the District of Bamako. In the District of Bamako, the majority of patients came from the commune VI. The majority of patients were referred/evacuated from referral health centres (57.6%) (Figure 1). The peak of the consultation was observed during the second quarter of 2018, *i.e.* 30.3% (Figure 2).

The main uro-nephrological history was oedema. The dominant general history was arterial hypertension (45.7%). The main surgical history was inguinal hernia

Table 1. Age distribution.

Age groups (year)	Number	Percentage
0 - 10	14	2.2
11 - 20	73	11.4
21 - 30	104	16.2
31 - 40	106	16.5
41 - 50	116	18.0
51 - 60	99	15.4
61 - 70	93	14.5
71 - 80	32	05.0
>80	06	0.9
Total	643	100
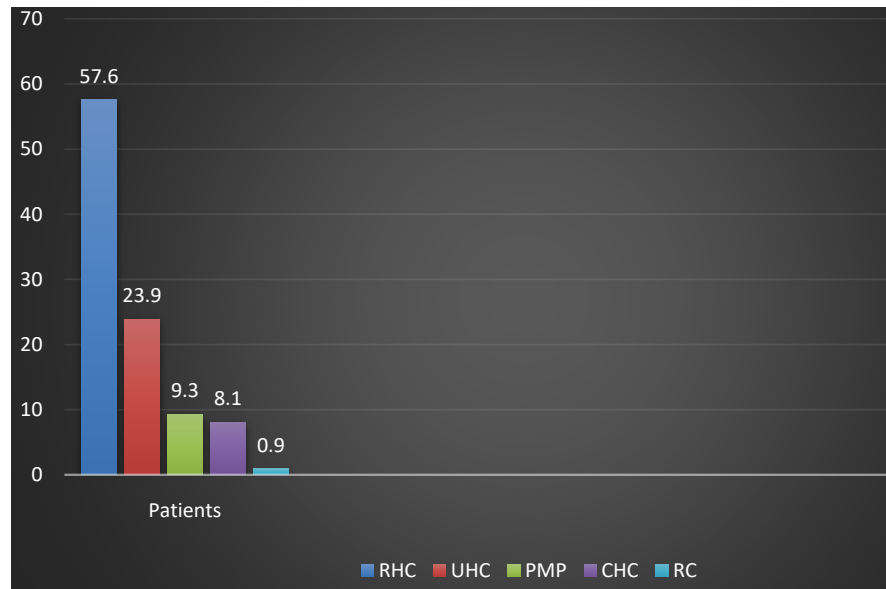
Figure 1. Distribution by health referral structure. Referral Health Centre (RHC), University Hospital Centre (UHC), Community Health Centre (CHC), Regional Health (RH), Private Medical Practice (PMP).
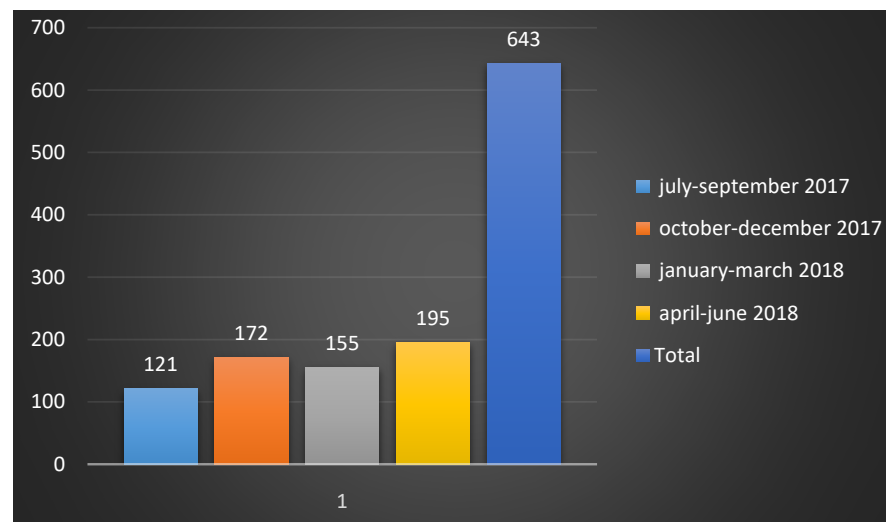
Figure 2. Distribution according to the period of consultation.

(2.6%) and caesarean section (2.5%). The main reason for consultation was renal failure (hypercreatinemia with collapsed glomerular filtration rate) (see **Table 2**).

The main obstetrical history was multigestitis (38.2%) and multiparity (60.5%). Herbal medicine (9.6%) and smoking (6.4%) were the other main causes. The main functional signs were vomiting (37.7%) followed by headache (34.8%). Conjunctival pallor (42.7%) and hyperthermia (42.1%) were the main general signs. Epigastric pain (34.2%) and renal edema (25.8%) were the main physical signs (see **Table 3**).

Kidney damage was more frequent in patients who did not attend school than

in those who did. But we did not find any difference. The occurrence of kidney disease in general was independent of the time of year.

The main reasons for consultation (Table 4) that revealed the first diagnostic hypotheses were: arterial hypertension for vascular nephropathy, oedematous syndrome for glomerular nephropathy, renal insufficiency and suffering for acute renal failure, hydronephrosis for obstructive uropathy and finally diabetes for diabetic nephropathy.

Glomerular nephropathy (25.2%), vascular nephropathy (23.6%) and acute renal failure (16.2%) were the first diagnostic hypotheses.

Of the second most common diagnostic hypotheses, glomerular nephropathy accounted for 22%, followed by obstructive uropathy (17.1%) and vascular nephropathy (16.6%). Obstructive uropathy (20.6%), acute renal failure (11.6%) and vascular nephropathy (9.4%) were the third most common diagnostic hypotheses after biological and imaging investigations.

During the study, 29.2% of patients were hospitalised. Diabetic nephropathy (62.7%) was more frequent in men than in women: the difference is significant. The first diagnostic hypotheses were independent of age.

Table 2. Distribution according to the reason for consultation.

Reason for consultation	Number	Percentage
Renal insufficiency	349	54.3
Hypertension	98	15.2
Edema syndrome	94	14.6
Ultrasound renal distress	39	6.1
Urinary lithiasis	28	4.4
Lumbar pain	28	4.4
Renal cyst	16	2.5
Hydronephrosis	13	2.0
Microalbuminuria	10	1.5
Bilharzia	09	1.4
Diabetes and renal failure	08	1.2
Polycystic kidney disease	08	1.2
Severe malaria	07	1.1
Proteinuria	06	0.9
Uncontrollable vomiting	06	0.9
Gross hematuria	04	0.6
Other*	51	7.9

*heart failure (n = 3), renal ectopy (n = 3), altered general condition (n = 3), renal tumour (n = 3), HIV (n = 3), bilateral nephromegaly (n = 2), dizziness and headache (n = 3), pelvic pain (n = 3), haemorrhoid (n = 3), Ischaemic stroke (n = 2), eclamptic crisis (n = 3), anuria (n = 2), epistaxis (n = 2), acute cystitis (n = 3), gout (n = 2), aches and pains (n = 2), chronic prostatitis (n = 3), pelvic mass (n = 3), liver failure (n = 1).

Table 3. Distribution of physical signs.

Physical signs	Number	Percentage
Epigastralgia	220	34.2
Renal edema	166	25.8
Extra-renal dehydration	142	22
Ascites	54	8.3
Urine dipstick	54	8.3
Crepitus rales	43	6.6
Jugular turgidity	30	4.6
Hepato-jugular reflux	26	4
Tachycardia	22	3.4
Algesic hepatomegaly	12	1.8
Pericardial friction	7	1

Table 4. Distribution according to the first diagnostic hypotheses.

First hypothesis diagnosis	Number	Percentage
Glomerular nephropathy	162	25.2
Vascular nephropathy	152	23.6
Acute renal failure	104	16.2
Obstructive uropathy	89	13.9
Diabetic nephropathy	59	09.2
Chronic renal failure	12	1.9
Interstitial nephropathy	12	1.9
Cardio-renal syndrome	10	1.6
Sickle cell disease	07	1.1
Polycystic kidney disease	06	0.9
Other*	30	04.7
Total	643	100

*gastropathy (n = 4), urogenital infection (n = 3), renal cyst (n = 3), functional colopathy (n = 2), HIVAN (n = 2), systemic diseases (lupus, polyarthritis: n = 2), stroke (n = 1), acute cystitis (n = 1), discarthrosis (n = 1), epistaxis (n = 1), liver disease (n = 1), tumour mass (n = 1), tuberculosis nephropathy (n = 1), acute lung oedema (n = 1), vertebral osteonecrosis (n = 1), silent right kidney (n = 1), urethral stricture (n = 1), hepato-renal syndrome (n = 1), consciousness disorder (n = 1), renal tumour (n = 1).

4. Commentary and Discussion

The study was the first in our department, mono-centric in a developing country. This was not without limitations as not all patients were hospitalized, not taking into account outpatient follow-up or the fate of patients in ambulatory care, age was not defined as well as the difficulty of access to the study site given its geographical location in the capital (Bamako). This work enabled us to find that the main reason for consultation was renal failure, *i.e.* 54.3%. This is in line with those found in the literature in Togo [6], as well as in Burkina-Faso [5].

This can be explained by the fact that most doctors consider it necessary to send the patient for consultation at the first rise in creatinine levels. The age range 41 - 50 years was the majority (18%) with a mean age of 42.6 ± 5.03 years. In general, people over the age of 50 are much more exposed to diseases due to the decrease in their immune defence, which explains the dominance of this age group. At this age, the presence of vascular pathologies is most often observed. A study conducted in the nephrology and haemodialysis department of the Sylvanus Olympio University Hospital in Togo [6] found an average age of 51 ± 18 years, which is higher than that of our patients. This could be due to the underdeveloped conditions of our country where young patients are exposed to predisposing factors including the use of potentially nephrotoxic drugs and poor lifestyle.

The sample size of patients in the first consultation was 643, of which 342 were male (53.2%) and 301 female (46.6%). The sex ratio of 1.4 in favour of males in our sample was identical to that of the Togo study [6] with 1.5. Housewives were the main socio-professional category with 34.2% in this study. This situation can be explained by the extreme poverty of this social stratum, which prefers to consult public rather than private facilities where it is expensive.

At the national level, the majority of patients came from the District of Bamako with 58.5%. In the District of Bamako, patients from Commune VI represented 22.6% of patients. This could be explained by the easier access (proximity) to the University Hospital through these health centres, but also by the fact that the hospital is the "heavy" centre for the management of renal disease for the benefit of the average citizen.

We found a high consultation rate of 30.3% in the second quarter of the study. This could be explained by the fact that during this period of the year in a Saharan country, nephrological consultations are solicited because of the hot climate, by crises of renal colic, lithiasis and acute and/or obstructive renal failure linked to states of hypovolemia (or extra-cellular dehydration).

School-going patients represented 50.1% with a secondary education level of 16.3%. This is explained by the awareness of parents to enrol their children more and more in school under the impulse of the creation of schools in both urban and rural areas. In the course of the study, questions on income revealed that the low socio-economic class was 79.1%, the middle class 16.3% and the high class 4.5%. The Togo study [6] found instead 53.5% for the low class; 36.4% for the middle class and 10.1% for the high class. These figures corroborate with World Bank ranking figures indicating a low GDP for both countries, *i.e.* $837 (585,900 XOF) per capita for Mali and $675 (472,500 XOF) per capita for Togo [6] [7].

The majority of patients were referred or evacuated by general practitioners at 70.5% followed by specialists at 22.7%, which is close to the literature [4] [5] [6]. Amongst specialist doctors, cardiologists were the most common with 21.2% of referrals/evacuations, which could be explained by the linkage of cardiac and renal damage to the consequences or complications. Referral/evacuation by physicians was 93.2%. A study in France [4] found 99.7% for doctors and mainly

71.9% for general practitioners. On the contrary, the team in Togo [6] found 49% for general practitioners and 30.8% for specialist doctors.

The majority of patients were referred or evacuated by referral health centres with a rate of 57.6%, followed by university hospitals (23.9%). These differences between countries should be better discussed on the basis of the organisation of their respective health systems.

The reasons for consultation other than renal failure were: arterial hypertension (15.2%, which could be explained by the fear of renal damage due to this cardiovascular risk factor that most patients are referred for, whose blood pressure figures are often high from the first consultation), oedematous syndrome (14.6%), proteinuria/microalbuminuria (1.8%), polycystic kidney disease (1.2%) and haematuria (0.6%). Proteinuria as a marker of kidney damage was only 0.9%. In contrast, a study conducted in 2014 by 17 nephrologists in health territory 5 of Brittany and Rennes in France [4] found 56.9% for chronic renal failure and 7.3% for proteinuria as reasons for first consultation. Non-nephrology reasons were 3.2% in France [4] while our study found 13%. This may be due to either referral/evacuation error or vomiting secondary to worsening renal damage or chronic renal failure. However, the study conducted in the nephrology and haemodialysis department of the Yalgado University Hospital in Ouagadougou, Burkina Faso [5] found a predominance of insufficiency (52.1%) as the reason for first consultation. The rates of first consultation for renal lithiasis in France and for renal failure in Burkina are almost identical to our study. The Togo team [6] in its study on first consultation found 73.2% for renal failure, 2.5% for proteinuria/microalbuminuria and 5.6% for arterial hypertension, 2.5% for haematuria and 3% for polycystic kidney disease. The Fez team in Morocco [6] found 72.2% renal failure in their study.

The peak of the consultation was observed in the second quarter of 2018, *i.e.* 30.3%; this is explained by the climate at this time of the year which is dry and warm, leading to functional (dehydration, true hypovolaemia) and/or obstructive (renal lithiasis) renal insufficiency in this West African country.

The uro-nephrological history was mainly represented by oedema (17.9%), while the general history was dominated by arterial hypertension (45.7%). Multiparity and multiple gestations were represented respectively at 65.7% and 57.1% for obstetrical history, while surgery was dominated by hernia repair at 2.6% and caesarean section (2.5%). Herbal medicine (traditional medicine with unknown composition) was the main nephrotoxic antecedent at 9.6%, followed by NSAIDs at 3.4% while smoking at 6.4% was the main risk factor for dietary habits.

Functional signs were mainly represented by incoercible vomiting, 37.7% followed by headache, 34.8%. General signs were conjunctival pallor at 42.7% followed by fever at 42.1%. Physical signs were dominated by renal oedema at 25.8% followed by extra renal dehydration at 22%. The urine dipstick was used very little, 1.9% in the diagnostic arsenal of orientation.

Glomerular nephropathy (25.2%), vascular nephropathy (23.6%) and acute renal failure (16.2%) were the first diagnostic hypotheses.

Glomerular nephropathy (22%), obstructive uropathy (17.1%) and vascular nephropathy (16.6%) were the second diagnostic hypotheses while obstructive uropathy (20.6%), acute renal failure (11.6%) and chronic renal failure (6.9%) were the third.

The Burkina team [5] found hypertension at 63.6% as the first diagnostic hypothesis, whereas in our study it was the second hypothesis at the time of consultation. The literature has always shown a predominance of arterial hypertension in sub-Saharan Africa, which is in line with the Burkina Faso study as the primary cause of kidney damage.

Diabetic nephropathy was more frequent in men (67.7%) than in women (70%): the difference is significant. The first diagnostic hypotheses were independent of age. Nephropathy was more frequent in patients who did not attend school than in those who did attend school. But we did not find a difference.

Usually, in terms of health, low educational level and socio-economic conditions are related to certain diseases such as kidney damage. The occurrence of kidney disease was independent of the time of year.

The main reasons for revealing the first diagnostic hypotheses were: arterial hypertension (67.3%) for vascular nephropathy, oedematous syndrome (77.6%) for glomerular nephropathy, renal insufficiency and suffering (21.7% and 25.6%) for acute renal failure, hydronephrosis (100%) for obstructive uropathy and finally diabetes (100%) for diabetic nephropathy.

Outpatient follow-up was carried out in 70.8% of patients, while 29.2% were hospitalised in the department. Emergencies were present in 7.6% of patients, of whom 1.9% were taken on haemodialysis.

5. Conclusion

The study included 643 patients who came for the first consultation, mostly from Bamako, and were consulted mainly for renal failure (54.3%). These patients were referred mainly by general practitioners (70.5%) practicing in the reference health centres (57.6%). Accuracy of the reason and rapidity of referral are crucial during the first nephrological consultation in order to preserve the patient's renal prognosis. The contribution and understanding of the general practitioner or referrer are crucial for nephrological management.

Conflicts of Interest

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

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