

# Clinical and Paraclinical Profile of Patients in First Nephrology Consultation at the Aristide Le Dantec University Hospital Center (ALD-UHC) About 542 Cases

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## Abstract

**Introduction:** Late recourse to nephrology consultation remains a topical issue which concerns both developed and developing countries such that a majority of the patients are seen to be at an advanced stage of chronic kidney diseases. The aim of this study is to assess the clinical and paraclinical profile of patients referred for primary nephrological consultation.

**Patients and methods:** This is a retrospective and descriptive analysis of the medical records of the patients admitted for primary consultation at the outpatient department of the nephrology department of the Aristide Le Dantec University Hospital Center from January 1 to December 31, 2015. The data collected are the referent's specialty, the reason for consultation, and the sociodemographic, clinical, and paraclinical characteristics of the patients.

**Results:** In 2015, 542 new patients were admitted for outpatient nephrology. The mean age was  $53 \pm 16$  years and the sex-ratio (M/F) was 1.15. Patients were referred by a general practitioner in 51.1% of the cases. The main reason for consultation was impaired renal function in 70.1% of cases. The physical examination revealed a hypertension in 70.1% of the cases, an edema in 21.2% of which 13.0% ( $n = 15/115$ ) were in the anasarca state. Mean serum creatinine was  $45.81 \pm 1.51$  mg/l. The mean glomerular filtration rate was  $42.33 \pm 35.22$  ml/min/1.73m<sup>2</sup>. Proteinuria was noted in 69.63%, microscopic hematuria in 29.41%, and leukocyturia in 26.96% of the cases. Kidney ultrasound was conducted for 423 patients and 32.38% were found to have small kidneys and poor differentiation. The diagnosis was an acute kidney injury in 7.74% of the cases and a chronic renal failure in 64.02% of the cases, the majority of whom were at stage 5 of CKD.

**Conclusion:** Patients referred for nephrology consultation are often found to be at an advanced stage of CKD. This delayed diagnosis is associated with an increase in morbidity and mortality factors and thus a poor prognosis. For example, programs for early detection and prevention of kidney diseases should be introduced.

**Keywords:** First Consultation; Chronic Kidney Disease; Nephrology; Dakar

## Introduction

Chronic kidney disease (CKD) is a public health problem worldwide because of its increasing frequency, severity, and high cost of management [1,2]. The late discovery of CKD is partly related to its asymptomatic nature, lack of training of practitioners, and lack of awareness of the population. In patients with CKD, the earlier the nephrologist is consulted (before starting renal replacement therapy) the lower the morbidity and mortality due to better preparation for renal replacement therapy, the management of the complications of CKD such as anemia and malnutrition as well as the introduction of a conservative treatment. CKD is still often discovered at a late stage even in developed countries. In Canada, 52% of CKD cases are in stage IV at the first nephrology consultation [3]. In sub-Saharan Africa, more than two-thirds of CKD cases are encountered for the first time at stage V [4]. Primary prevention seems to be the best way to reduce the incidence of CKD in developing countries such as Senegal. It is in this context that we undertook this work with the aims of describing the epidemiological, clinical, and paraclinical profile of the patients referred to their first nephrology consultation.

## Patients and Methods

### Type and Scope of Study

This was a descriptive retrospective study conducted from January 1 to December 31, 2015. It was conducted in the outpatient nephrology department of the Aristide Le Dantec University Hospital Center (ALD-UHC) in Dakar, Senegal.

### Study population

The target population was that of patients consulting in the nephrology department during the study period. Those included were patients who were visiting the ALD-UHC Nephrology Department for the first time. Patients referred directly to the hospital unit of this nephrology department, kidney transplant patients and those whose records were unusable were not included.

### Data collection

Sociodemographic, clinical and paraclinical data, the specialty of the medical correspondent, and the reason for consultation were collected through manual analysis of patient files using a pre-established operating file.

### Definitions of Operational Variables

Hypertension was defined as systolic and/or diastolic blood pressure greater than or equal to 140 mmHg and 90 mmHg, respectively, and grades were determined according to the WHO 1999 Classification [5]. Glomerular filtration rate (GFR) was estimated by the Modification of Diet in Renal Disease (MDRD) formula [6]. Diabetes mellitus was retained in the presence of fasting glucose levels greater than 1.26 g/l (7,1mmol/l) and/or antidiabetic therapy (oral antidiabetic agent, insulin) [7]. Other biological abnormalities were defined according to laboratory standards. The uremic syndrome was considered acute if its duration of evolution was less than 3 months.

### Statistical Analysis

The data was captured by the Sphinx software version 5.1.0.2 and analyzed by Statistical Package for Social Science (SPSS) software version 18. The qualitative variables were presented in proportion (percentage). Quantitative variables were presented as mean  $\pm$  standard deviations.

## Results

Of the 998 patients in the nephrology department, 690 (69.13%) patients were admitted for consultation including 542 who were included in the study. The mean age of the patients was  $53 \pm 16$  years with a sex ratio of 1.15, and 41.50% of them came from suburban areas. The majority of the patients (80.81%) were referred by doctors and most of them by a general practitioner. The distribution of patients according to the referent's specialty is shown in (Table 1). Renal impairment, reported in 380 patients (70.1%), was the most frequent reason for consultation. The reasons for consultation are shown in (Figure 1). The different patient histories are shown in (Table 2).

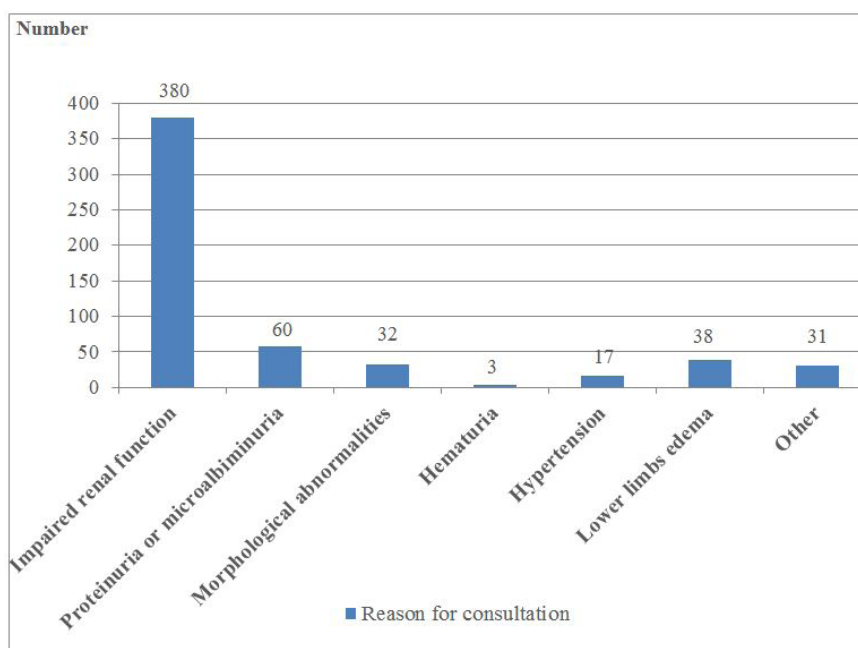


Figure 1: Distribution of 542 patients admitted first nephrology consultation according to the reason for consultation

Medical specialty	Number (n)	Percentage (%)
General practitioner	277	51.11
Cardiology	53	9.78
Urology	20	3.69
Internal medicine	19	3.51
Gynecology	13	2.40
Dermatology	11	2.03
Endocrinology	11	2.03
Haematology	11	2.03
Neurology	10	1.85
Occupational Medicine	10	1.85
Nephrology	9	1.66
Rheumatology	8	1.48
Gastroenterology	6	1.11
Oncology	5	0.92
Geriatrics	3	0.55
Pulmonary medicine	3	0.55
Infectious diseases	3	0.55
Psychiatry	2	0.37
Resuscitation	2	0.37
Orthopedics	2	0.37
Neurosurgery	1	0.18
State nurse	5	0.92
Traditional practitioner	1	0.18
Unspecified	57	10.50
<b>Totally</b>	<b>542</b>	<b>100</b>

**Table 1:** Distribution of 542 patients admitted in first nephrology consultation according to the referent's specialty.

Histories	Number	Proportion (%)
Hypertension	335	61.80
Diabetes mellitus	96	17.70
Phytotherapy	122	22.5
Anti-inflammatory agents, non-steroidal	6	1.10
Smoking	28	5.20
Heart diseases	17	3.14
Gout	9	1.66
Pulmonary tuberculosis	6	1.10
Lupus erythematosus	7	1.29
HIV	3	0.55
Kidney disease	17	3.14
Edema	9	
Hematuria	6	
Polycystic kidney diseases	2	
Gynecological	20	3.69
Pre-eclampsia	15	
Postpartum period, AKI	5	
Urologic diseases	37	6.82

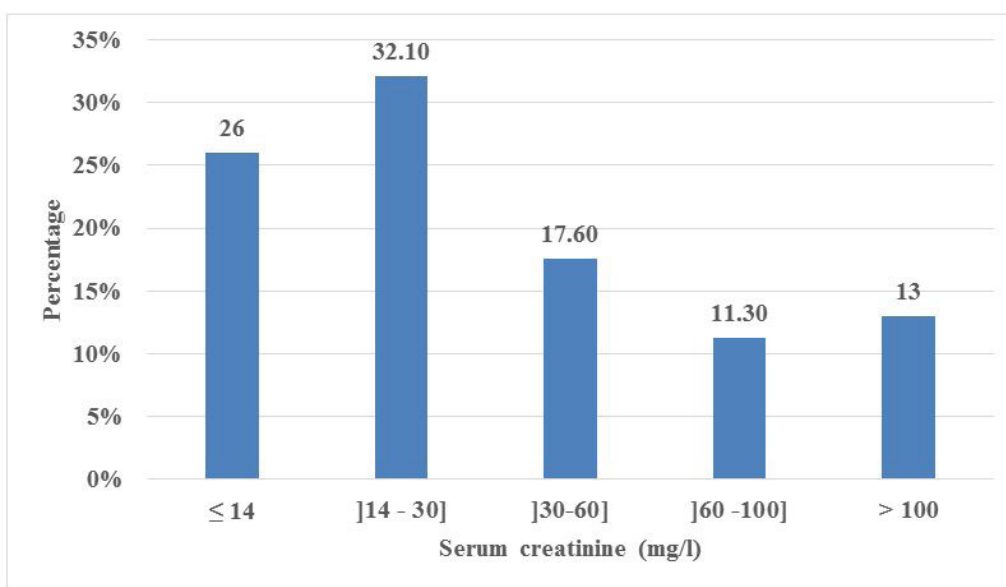
Histories	Number	Proportion (%)
Sickle Cell diseases	15	2.76
Hemoglobin SS disease	9	
Hemoglobin AS disease	5	
Hemoglobin SC disease	1	
Oncological disease	6	1.10
Uterine cervical neoplasms	3	
Multiple myeloma	3	

**Table 2:** Distribution of patients according to the history of the 542 patients admitted in first nephrology consultation.

The physical examination revealed a hypertension in 70.1% of the cases, a edema in 21.2% of which 13.0% (n = 15/115) were in the anasarca state. Hypertension was grade I in 21.8% (n = 118), grade II in 24.5% (n = 124) and grade III in 24.9% (n = 135) of the cases. Urine strip was used in 18 (3.32%) patients, were negative in 2 patients, revealed proteinuria (PU) in 13 patients, hematuria (HU) in 8 patients, leukocyturia in 6 patients, and nitrites in 2 patients. Hypovolemia was noted in 17 patients (3.13%). The uremic syndrome was noted in 195 patients or 35.97% of the cases and was chronic in 193 patients.

Serum creatinine was measured in 518 patients or 95.75% of cases. Its mean was 45.81 +/- 1.51 mg/l. The distribution of patients with respect to the serum creatinine level is shown in (Figure 2). The mean GFR was 42.33 +/- 35.22 ml/min/1.73m<sup>2</sup>. The mean hemoglobin level was 10.76 +/- 4.45 g/dl, and anemia was observed in 69.60% (300/431) of the patients and in 77.80% of patients with GFR below 60ml/min/1.73m<sup>2</sup>. It was normochromic normocytic in 70.95%. One hundred and ninety-eight (198) patients or 45.20% had a macroproteinuria while 107 or 24.42% had a microalbuminuria. PU was nephrotic in 19.45% of cases. HU was noted at 29.41% and leukocyturia at 26.96% of the patients. Other biological parameters are shown in (Table 3).

Kidney ultrasound was performed in 423 patients and 32.38% were found to have small kidneys and poor differentiation.



**Figure 2:** Distribution of 518 patients admitted in first nephrology consultation according to serum creatinine

Biological parameters	Mean +/- standard deviation	Number of consultants who benefited from the dosage
Serum creatinin (mg/l)	45.81 +/- 1.51	518
Blood urea nitrogen (g/l)	0.94 +/- 0.82	518
eGFR (ml/min/1.73m <sup>2</sup> )	42.33 +/- 35.22	518
Hemoglobin (g/dl)	10.76 +/- 4.45	431
Serum uric (mg/l)	76.54 +/- 22.90	75
Blood sugar (g/l)	1.14 +/- 0.49	266
Proteinuria (g/24h)	0.92 +/- 1.28	438

**Table 3:** Mean, standard deviation of biological parameters and number of patients who benefit from the dosage in patients admitted in fist nephrology consultation during the study period.

Electrocardiogram was performed in 180 patients and pathological in 146 patients or 81.11% of cases. The researcher recorded sinus rhythm in 168 (93.33%) patients, left ventricular hypertrophy (LVH) in 105 (48.16%) patients, and left atrial hypertrophy

(LAH) in 47 (21.15%) patients. Cardiac ultrasonography was performed in 68 patients and was found to be abnormal in 50 patients (73.52%). The researcher had found an LVH in 16.94%, pulmonary hypertension in 9.32%, segmental kinetic disorders in 3.38% and heart failure in 9.32% of the patients.

The first consultation diagnosed acute kidney injury in 7.74% of patients, chronic renal failure in 64.02% of patients, and CKD stage 1 or 2 in 19.37% of patients. The age of the CKD patients was over 60 in 47.99% of the cases. The distribution of patients according to the stage of the MRC is shown in (Figure 3).

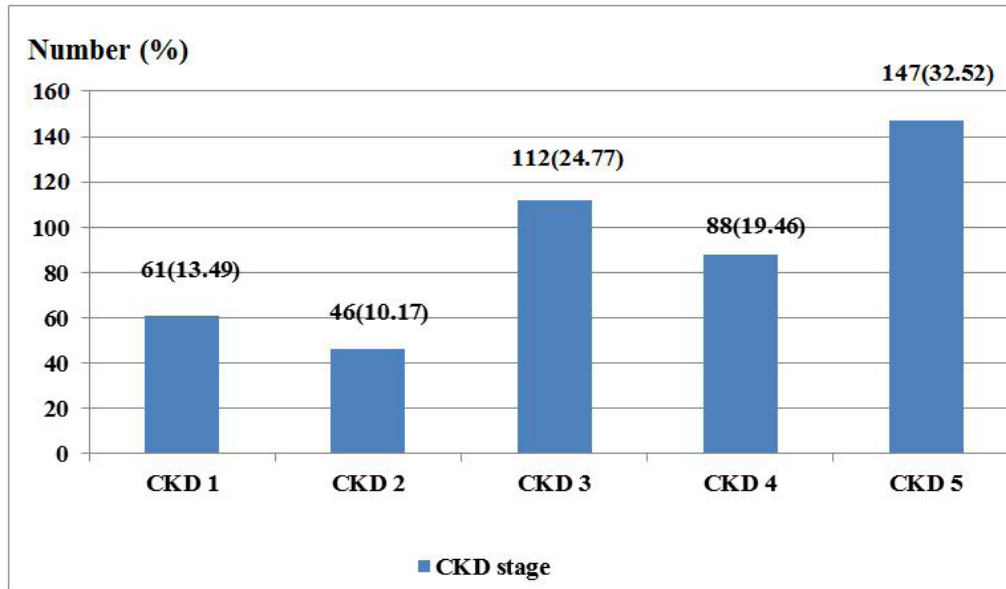


Figure 3: Distribution of 452 CKD patients admitted in first nephrology consultation according to the stage of CKD

## Discussion

During the study period, our department admitted 542 new outpatient cases. This high incidence can be explained by the fact that the nephrology department of ALD-UHC is the largest national reference nephrology service.

The mean age of patients was  $53 \pm 16$  years. This result is consistent with that observed in developing countries, with an average age of  $52 \pm 18$  years in Morocco and  $51 \pm 18$  years in Togo [8,9]. Coulibaly *et al.* reported an increase in the age of patients at the first nephrology consultation in Burkina Faso with a mean age of 40 years in 1998 to 45 years in 2013 [10]. The young age of the patients admitted for their first nephrology consultation reflects the young age of the Senegalese population. Several scholars report a predominance of men at the first consultation [5,9-11]. In fact, renal diseases are more common in men [12]. The majority of patients were referred by general practitioners followed by cardiologists and urologists. This result is consistent with the literature [8-10,13]. Cardiologists work very often with nephrologists in cardio-renal syndromes including type 1, type 2, and type 5. Alteration of renal function was found to be the main reason for consultation in nephrology. This result is consistent with the literature data [8-10,13-15]. The majority of patients were admitted at stages 4 or 5 of the CKD. This is due to the asymptomatic nature of CKD, the lack of awareness of the populations and general practitioners, and the poor performance of health systems with poorly defined courses of care for cases of renal failure. Routine screening of at-risk individuals will allow early discovery of CKD and better management. The urine strip was only used in 17 patients, i.e., 3.36% of them. This is in contrast with the Swedish study which reported that the urine strip was the most commonly used screening tool for proteinuria in patients with a 24% rate [16].

In our study, patients were seen for the first time with a mean GFR of  $42.33 \pm 35.22$  ml/min /1.73m<sup>2</sup>. A lower GFR was noted during the first consultation in Canada ( $29 \pm 22$  ml/min/1.73m<sup>2</sup>) [3]. The majority of patients were admitted in the advanced stage of CKD. This shows a delay in referral of patients to nephrologists. This problem was highlighted in several studies in different parts of the world: The United States, Australia, Europe and sub-Saharan Africa [12,17-22]. These results show that the delay in the management of chronic renal failure is not limited to underdeveloped countries. This result is quite alarming as the later the diagnosis, the worse the CKD prognosis. The adverse consequences of late management in nephrology are numerous and well-known: more precarious clinical state and more marked biological abnormalities when considering renal replacement therapy, longer hospital stay, and increased mortality rate both short- and long-term [17,19,21, 23]. Thus, public awareness policies and practitioners must be employed to promote early diagnosis of CKD in Senegal. In our study, PU was sought in 80.81% of the patients. PU dosing was not as common in the other studies. In fact, it was performed in 30% of patients in the Curtis cohort and 22.9% of patients in the Prevot *et al.* cohort [3,13]. Gasparini *et al.* had noted a poor evaluation of PU even in patients at risk (diabetic, hypertensive) [16]. PU, independent of GFR, is a major risk factor for poor renal prognosis and mortality [24]. PU was pathological in 69.63% of our patients who received a dosage. This figure was higher than that recorded in France (29.9%) [13].

The etiological research of the kidney disease is the most difficult step of the diagnostic approach in our regions because majority of the patients are seen at an advanced stage of CKD making it difficult to acquire the renal biopsy. This difficulty could largely explain the high rate of undetermined causes of CKD. Indeed, no cause could be determined in 20.45% of the cases of our study. In the literature, this figure varies between 27.1% and 62% [23,25]. In most African studies such as ours, the known causes are by far dominated by hypertension followed by diabetic nephropathy with rates varying between 25% and 62.1% for hypertension and between 11% and 20.6% for diabetic nephropathy [10,15,26]. In western countries, the leading cause of CKD is also hypertension followed by diabetes [12,27].

Our study has several limitations; it is a monocentric retrospective study, several biological parameters were not collected and some records were not exploitable. A cross-sectional and at best prospective multi-center study is necessary to better characterize the first nephrological consultation and to be able to extrapolate the results at the national level.

## Conclusion

Patients referred for nephrology consultation are often seen at an advanced stage of CKD. In this study, impaired renal function was the primary reason for consultation and the majority of patients were admitted at stages 4 or 5 of CKD. This delayed diagnosis is associated with an increase in morbidity and mortality factors and the consequent poor prognosis and also with an increase in the cost of health. Thus, programs for the early detection and prevention of kidney diseases should be instituted especially for at-risk individuals.

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