Clinical and demographic characteristics of patients with kidney disease presenting at a tertiary hospital for expert care in south-west Nigeria

Güneybatı Nijerya'da uzman bakımı için bir üçüncü basamak hastaneye başvuran böbrek hastalığı olan hastaların klinik ve demografik özellikleri

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Abstract

Aim: Although chronic kidney disease (CKD) remains an important health challenge in our environment, late presentation of the patient for nephrology care is common. We opined that dissemination of information on the sociodemographic distribution, clinical presentation and common etiology of CKD among our patient will increase individual and medical professionals' awareness of the disease. In addition, it is believed that this will ultimately result in lower threshold for screening and early referral for specialist renal care.

Methods: This was a cross-sectional descriptive study involving 152 patients with any form of renal disease either seen primarily at, or referred to the adult nephrology clinic of the hospitals between January 2013 and December 2015. The socio-demographic parameters, clinical characteristic and laboratory data were extracted with a proforma designed for data collection.

Results: Of the 152 patients analyzed, 87 (57.24%) were males. The mean age was 49.29 (15.92) years. About one quarter was within the age range 51-60 years. More than half (53.9%) were rural dweller. Common indication for referral includes abnormal renal ultrasound findings, elevated serum creatinine and urea, and abnormalities in urine analysis. Malaise, reduce urinary flow and body swelling were the common symptoms at presentation in 50.65%, 40.1% and 34.2%, respectively among the patients. The median eGFR was 18.78 (7.86-84.55) ml/min/1.73m^2. Across all age groups, majority (48.0%) presented in stage 5 CKD. Hypertensive nephrosclerosis (27.0%), chronic glomerulonephritis (14.5%) and diabetes nephropathy (9.2%) were found to be the leading causes of CKD. Majority of the patients (40.8%) were worked up for and commenced on hemodialysis soon after presentation. Among the end-stage renal disease patient, only 7 (4.6%) had renal transplantation at referred centers. Focal segmental glomerulosclerosis was the commonest histological findings among the nephrotic syndrome patient while membranous nephropathy was documented in only 2 patients.

Conclusion: Most patients present to the nephrology clinic of our hospital at advanced stage of CKD. We observed that hypertensive nephrosclerosis and glomerulonephritis are the leading causes of their kidney disease.

Keywords: Clinical profile, Demography, Chronic kidney disease, Nephrology clinic

Öz

Amaç: Her ne kadar kronik böbrek hastalığı (KBH), çevremizdeki önemli bir sağlık sorunu olsada, nefroloji bakımı için hastanın geç sunumu sıktır. Sosyodemografik dağılım, klinik prezentasyon ve KBH'ın ortak etiyolojisi hakkındaki bilgilerin yayılması, bireysel ve tıbbi profesyonellerin hastalık bilincini artıracağını belirledik. Ek olarak, bunun sonuçta tarama için daha düşük eşik ve uzman böbrek bakımı için erken sevk ile sonuçlanacağına inanılmaktadır.

Yöntemler: Ocak 2013 ve Aralık 2015 tarihleri arasında hastanelerin yetişkin nefroloji kliniğinde ya da öncelikle görülen veya herhangi bir renal hastalığı olan 152 hastayı kapsayan ve kesitsel tanımlayıcı bir çalışmadır. Sosyo-demografik parametreler, klinik özellikler ve Laboratuvar verileri, veri toplama için tasarlanmış bir proforma ile çıkarıldı.

Bulgular: Analiz edilen 152 hastanın 87'si (%57,24) erkekti. Yaş ortalaması 49.29 (15,92) idi. Yaklaşık dörtte biri 51-60 yaş aralığındaydı. Yarıdan fazlası (%53,9) kırsalda yaşayanlardandı. Yönlendirme için ortak endikasyon anormal renal ultrason bulgularını, yüksek serum kreatinin ve üre ve idrar analizindeki anormallikleri içerir. Malaise, üriner debiyi azaltan ve vücut şişmesi, hastalar arasında sırasıyla %50,65, %40,1 ve %34,2 oranında sık görülen semptomlardı. Medyan eGFR, 18.78 (7.86-84.55) ml/dk/1,73 m^2 idi. Tüm yaş gruplarında çoğunluk (%48,0) evre 5 KBH'da ortaya çıkmıştır. KBH'ın başlıca nedenleri arasında hipertansif nefroskleroz (%27,0), kronik glomerülonefrit (%14,5) ve diyabet nefropatisi (%9,2) bulundu. Hastaların çoğunluğu (%40,8) başvuru yapıldıktan kısa bir süre sonra hemodiyaliz için çalışmaya başlandı. Son dönem böbrek hastaları arasında sadece 7'sine (%4,6) sevk edilen merkezlerde böbrek nakli yapıldı. Fokal segmental glomerüloskleroz, nefrotik sendromlu hasta arasında en sık görülen histolojik bulgulardı, sadece 2 hastada membranöz nefropati kaydedildi.

Sonuç: Çoğu hasta, hastanemiz nefroloji kliniğine KBH'nin ileri evresinde başvurmaktadır. Hipertansif nefroskleroz ve glomerülonefritin, böbrek hastalıklarının önde gelen nedenleri olduğunu gözlemledik.

Anahtar kelimeler: Klinik profil, Demografi, Kronik böbrek hastalığı, Nefroloji kliniği

Introduction

Worldwide there is a rise in the number of patients with chronic kidney disease (CKD) and consequent end-stage kidney failure. According to the reports from different countries including the United States, CKD affects 10–16% of adults around the world [1].

However, the prevalence of CKD in the early stages as well as treated end-stage renal disease (ESRD) differs from country to country. In Africa, the prevalence of the disease is estimated to be about 10.4% or more in some populations [2,3].

Chronic glomerulonephritis, diabetes mellitus and hypertension are important causes of CKD worldwide. In Sub-Saharan Africa (SSA), CKD affects mainly young adults aged 20– 50 years and is primarily due to hypertension and glomerular diseases [4]. While HIV infection and genetic disorders also contribute significantly to CKD burden, primary chronic glomerulonephritis are seen most often [5]. Due to the high cost of treatment, many patients in this sub-region cannot afford optimal treatment of CKD with consequent poor outcome. In same continent, it has been reported that there is a higher prevalence of earlier stages of CKD [6,7].

Evidences suggest that the adverse outcomes of CKD, such as end stage renal disease, cardiovascular disease, mineral bone disease and premature death can be prevented or delayed. Hence, primary and secondary prevention have been advocated in order to save cost and limit disability arising from the complication of CKD [8].

Management of kidney failure is focus on prompt diagnosis, treatment of specific etiology of the disease entity and dialysis or transplantation. Screening asymptomatic individuals at increased risk could allow early detection of CKD [8]. Strategies for early detection and intervention include laboratory measurement of serum creatinine, estimation of glomerular filtration rate (eGFR), urine analysis for blood, protein and other abnormality. Imaging of the kidney, assessment of the clinical features and complaints of the patient are important in the identification of individuals with impaired kidney function. It has been shown that prompt and adequate treatment of earlier stages of CKD including initiation of cardiovascular risk reduction is beneficial in slowing the progression toward end stage kidney disease [9].

The availability of renal care is scarce in most sub-Saharan Africa countries due to the high costs and shortage of skilled personnel. These factors in addition to late presentation of the patients are invariably responsible for high morbidity and mortality experienced in the developing countries. Early detection of CKD and referral of the patient particularly at early stages of the disease is important as renal replacement therapy is likely to be more effective if they are implemented early as indicated in the course of the disease process.

Although CKD remains an important health challenge in our environment, there is no data from this center on the characteristics of CKD patients attending the nephrology clinic. We set out to determine the pattern and clinical presentation of CKD patients at the nephrology clinic of Ekiti State University Teaching Hospital, Ado Ekiti South West Nigeria. We opined that dissemination of information on the sociodemographic distribution, clinical presentation and common etiology of CKD among our patient will in no small measure increase individual and medical professionals' awareness of the disease. In addition, it is believed that this will ultimately result in lower threshold for screening and early referral for specialist renal care.

Materials and methods

This was a cross-sectional descriptive study involving 152 patients with any form of renal disease either seen primarily at, or referred to the adult nephrology clinic of the hospitals between January 2013 and December 2015. Patients are usually registered at the clinic where biodata are documented. Clinical assessment including detailed history of the presenting complaints and examination including laboratory test are usually done and documented in individual patient's medical record. The demographic, clinical and laboratory parameters were collected with a proforma designed for data collection. Permission for the use of the data was obtained from the ethic and research committee of the hospital.

Diagnosis of CKD

The clinical profile of the patients which include history of the illness, physical examination, and laboratory investigations such as renal ultrasonography, urinalysis, and blood biochemistry was retrieved. Renal disease etiology was largely determined clinically except some cases of nephrotic syndrome where the patient had renal biopsy and histology report was available.

In this study, we adopted the following concepts and definitions; CKD was diagnosed and classified according to the KDOQI definition and staging [10]. The definition considers the persistence of kidney disease for more than three months. However, in the absence of previous data on eGFR or markers of kidney damage, chronicity was inferred from the clinical presumption of kidney disease for >3 months.

Proteinuria was defined as normal (urine dipstick negative), mild, moderate or heavy if urine dipstick reading was 1+, 2+ or ≥3+, respectively.

We entertained the diagnosis of chronic glomerulonephritis (CGN) if the patient present with hematuria, proteinuria, and reduced urine output and shrunken kidney size as well as loss of corticomedullary differentiation on ultrasound with anemia or low pack cell volume (PCV).

Hypertension was defined as the presence of a persistently elevated systolic blood pressure ≥140mmHg and/or diastolic blood pressure ≥ 90mmHg in patients aged 15 years and above, and/or the use of antihypertensive drugs and/or past medical history of systemic hypertension. Hypertension was considered as the cause of renal disease if there is history of long-standing hypertension that predated kidney disease, severe hypertension at consultation and or a familial history of hypertension. In addition, presence of mild proteinuria, evidence of left ventricular hypertrophy, hypertensive retinal changes as well as the absence of clinical renal symptoms suggestive of glomerulopathy prior to the discovery of hypertension.

Diabetic nephropathy was diagnosed if patient had a long history of diabetes mellitus, significant proteinuria, presence of other complications of diabetes mellitus with normal or increased renal sizes on ultrasound. For patient having both of

hypertension and diabetes, diagnosis of diabetic nephropathy or otherwise was presumed if there is presence of ocular manifestations of diabetes mellitus. Data on HIV/AIDS patient with renal diseases was not available at the time of data collection and hence not included in this study.

Statistical analysis

The collected data was entered into SPSS version 20 for analysis. Qualitative data were analyzed and expressed as frequency and percentage. Normal distributed continuous data were summarized as mean (SD) and non-normal data as median (IQR); the 25th-75th percentiles were specified. Tables and charts were used to illustrate the data and present the results.

Results

Among the 152 patients, there were 87 males and 65 females with sex ratio of 1.3:1. The mean age was 49.29 (15.92) years (range: 17-90 years) while about one quarter were within the age range 51-60 years. A relatively higher proportion (53.9%) lived in the rural area compared to those who resided in the sub-urban community (46.1%). Majority (19.1%) of the patients were petty traders while 16.4% and 15.8% were civil servants and self-employed, respectively as summarize in table 1.

Table 1: Distribution of socio-demographic characteristics of the patients

Parameters	Frequency (%)
Gender	
Male	87 (57.2)
Female	65 (42.8)
Rural dwellers	82 (53.9)
Age category	
≤30	23 (15.1)
31-40	22 (14.5)
41- 50	32 (21.1)
51-60	38 (25.0)
61-70	22 (14.5)
≥71	23 (15.1)
Occupational Categories	
Trading	29 (19.1)
Civil servant	25 (16.4)
Self-employed	24 (15.8)
Driving	5 (3.3)
Students	14 (9.2)
Teaching	9 (5.9)
Farming	6 (3.9)
Unemployed	12 (7.2)
Retiree	11 (7.3)
Others*	17 (11.2)

* clergy, medical personnel, aged, housewife

Yoruba tribe accounted for more than two third of the patients, though this is not unexpected as the study was conducted in predominantly Yoruba dominated region of the country.

Common indication for referral includes abnormal renal ultrasound findings, elevated serum creatinine and urea, and abnormalities in urine analysis.

Figure 1 summarizes the common symptoms among the patients at presentation. Malaise, anemia, oliguria, body swelling and frothiness of the urine were seen in 50.65%, 44.08%, 40.13%, 34.21% and 11.12%, respectively. Twelve (7.89%) patients had no complaints at presentation and were only referred on account of abnormal urinary findings (AUF). Less common clinical features include flank pain (4.61%), nocturia (11.84%), Vomiting (8.0%), bone pain (1.97%), pruritus (2.0%), and macroscopic hematuria (3.29%).
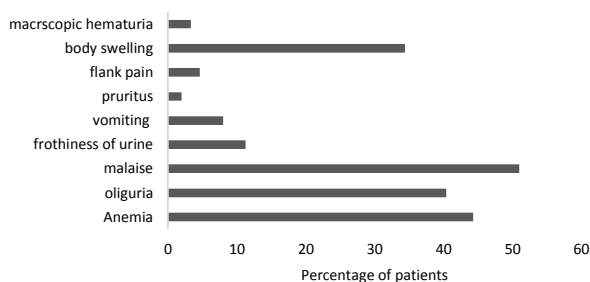

Figure 1: Common complaints by the patients at first consultation

The mean pack cell volume was 27.43 (7.38) while the median value of serum urea and creatinine was observed to be high among the patient at presentation as shown in table 2.

The median eGFR was 18.78 (7.86-84.55) ml/min/1.73m^2. Across all age groups, stage 5 disease was the commonest presentation. About half of the patients (48.0%) were in stage 5 CKD while the proportion of patient in stage 4 was 13 (8.6%).

Table 2: Distribution of clinical and laboratory data of the patients

Characteristics	Values
Age (years), mean (SD)	49.29 (15.92)
Systolic BP, mean (SD)	159.16 (38.38)
Diastolic BP, mean (SD)	99.16 (22.92)
PCV (%), mean (SD)	27.43 (7.38)
Urea (mmol/l), median (IQR)	18.00 (6-28)
Creatinine (μmol/l), median (IQR)	407.00 (89.25-950.00)
eGFR, median (IQR)	18.78 (7.86-18.80)
% with eGFR <60, mean (SD)	106 (68.4)
% with eGFR <15, mean (SD)	73 (48.0)
% treated with Hemodialysis, mean (SD)	62 (40.8)
% Transplanted, mean (SD)	7 (4.6)

eGFR in ml/min/1.73 m^2, PCV: Pack cell volume, BP: Blood pressure in mmHg

As shown in table 3, hypertensive nephrosclerosis (27.0%), chronic glomerulonephritis (14.5%) and diabetes nephropathy (9.2%) were found to be the leading causes of CKD.

Table 3: Common etiology of kidney disease among the patients

Diagnosis	Frequency (%)
Hypertensive Nephrosclerosis	41 (27.0)
Chronic glomerulsclerosis	22 (14.5)
Simple renal cyst	15 (9.9)
Diabetic nephropathy	14 (9.2)
ADPKD	11 (7.2)
Nephrotic syndrome	10 (6.6)
Abnormal urinary Findings	6 (3.9)
Obstructive uropathy	5 (3.3)
Lupus Nephritis	2 (1.3)
Pyelonephritis	3 (2.0)
Malignancy	4 (2.6)
Congenital abnormality	2 (1.3)
Unknown	14 (9.2)
Others	3 (2.0)

ADPKD: Autosomal dominant polycystic kidney disease
Others include; AKI, isolated proteinuria / hematuria

Focal segmental glomerulosclerosis (FSGS) was the commonest histological findings among the nephrotic syndrome patient while membranous nephropathy was documented in only 2 patients.

Majority of the patients (40.8%) were worked up for and commenced on hemodialysis soon after presentation. Among the ESRD (stage 5) patient only 7(4.6%) had renal transplantation at referred centers.

Discussion

Clinical presentation of patient suffering from kidney disease varies according to the stage of the disease. This may range from asymptomatic apparently healthy individual without any complaint to florid uremic patients. Commonly, non-constitutional symptoms that mimic other illness may precede and be a pointer to underlying kidney failure. These symptoms

are usually overlooked until very late when the damage becomes irreversible.

Optimal management of CKD patients requires early recognition, appropriate investigation and collaboration between primary care physicians and nephrologists.

Among the patients, common indication for referral includes abnormal renal ultrasound findings, elevated serum creatinine and urea, and abnormalities in urine analysis.

Similar to other studies, there was more male sex [11-13]. The difference in the sex ratio could be a reflection of health seeking behavior among the male in addition to the increase risk factors for CKD prevalent among the male sex.

The majority of patients were seen for the first time late in their disease with chronic renal failure at which time renal replacement therapy become inevitable. About two third of the patients (68.4%) had CKD while the proportion of patients in established end stage renal disease were 48.0%.

A retrospective study conducted on medical data over a five-year period involving 301 patients with chronic renal failure by Ouattara et al. [14] showed that 82% of cases were in end-stage renal disease. Sakhuja et al. [15] reported that about two-thirds of their patients had developed ESRD at the time of the first consultation with a nephrologist. Similarly, a Cote D'Ivoire study involving 252 patients reported that nine out of ten patients were at ESRD at presentation [16]. This report is in agreement with findings by other researchers where majority of patients were seen at advanced stage of CKD due to several reasons including silent and asymptomatic nature of CKD, lack of population awareness, poorly equipped and high cost of health system [11,17-21]. However, this result is in contrast with the figure obtained in developed countries where there is good health system and better patient awareness. A systematic review of patient and health system characteristics associated with late referral in CKD carried out by Navaneethan et al. [22] showed that older age, lower socioeconomic status, less education among others were factors associated with late presentation.

Most of our patients would have patronized traditional healers, and used over the-counter drugs without improvement before resorting to consult medical practitioner. This is a common practice and a cause of late presentation to the nephrologist in our environment. The consequences of delay treatment of kidney disease are numerous. This include marked clinical and biochemical derangement in the body system. These patients will become dependent on renal replacement therapy earlier than those who started receiving specialist care at early stage of CKD.

Hypertension and glomerulonephritis were the two most common cause of CKD among our patients similar to other report [20,21]. Evidences have shown that hypertensive nephrosclerosis is a major cause of ESRD among the black race [23,24]. Research has demonstrated increasing prevalence of hypertension with age. The risk of hypertension related complications such as cardiovascular disease and CKD is equally heightened among the older adults [14,16,21,25-29].

We observed that chronic glomerulonephritis was diagnosed most often among the younger patients in this study. About 10% of the patients with CKD were classified as unknown. In our environment, establishment of the actual etiology of kidney disease is challenging. This is an important drawback to the optimal management of the patient.

Anemia is a common presenting feature among our patients as almost half of the patients (44.3%) presented with low PCV at first visit. The high prevalence of anemia is consistent with findings from other studies [11,14]. Anemia commonly occurs in CKD with onset as early as Stage 3 and increases in prevalence as CKD progresses. It is associated with increase cardiovascular morbidity and mortality.

Limitations: Lack of detailed information regarding possible causes of renal disease in many patients due to cost of renal biopsy, limited availability of diagnostic tools and laboratory support. These data may not adequately represent the situation of CKD in our general population because of small sample size and inaccessibility of renal care to the majority.

Conclusion

Most patients present to the nephrology clinic of the hospital with advanced stage of CKD, it is observed that hypertensive nephrosclerosis and glomerulonephritis are the leading causes of their kidney disease. To avert this trend, sensitization of the general population and healthcare professionals on the importance of regular routine screening and early referral of patients to the nephrologists for expert care are recommended.

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