

The Plight of Chronic Kidney Disease Patients in Nigeria

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Abstract: Chronic Kidney Disease (CKD) is a serious condition associated with premature mortality, decreased quality of life, and increased health-care expenditures. Untreated CKD can result in End Stage Renal Disease (ESRD) and necessitate dialysis or kidney transplantation

The plight of chronic kidney disease patient in third world countries like Nigeria is enormous. It is under reported and a common cause of death due to the fact that most patients afflicted with this disease cannot afford the treatment. There is lack of enough trained manpower to manage these patients. The primary health care system in the country is also in poor state, making it difficult to identify a large number of both those at risk of developing CKD and those with early stages of CKD. Moreover, the federal government and various state governments do not pay enough attention to the plight of this group of patients. They need special attention from the government.

Key Words: Glomerular filtration rate (GFR), End Stage Renal Disease (ESRD), Chronic Kidney Disease (CKD), Dialysis

I. Introduction

The operational definition of CKD developed by United States of America National Kidney foundation, Kidney Outcome Quality Initiative (K/DOQI) include the following criteria:¹

- i) Kidney damage for more than 3 months as defined by structural or functional abnormalities of the kidney with or without decreased glomerular filtration rate. Manifested by either pathological abnormalities or makers of kidney damage, including abnormalities in composition of the blood or urine, or abnormalities in the imaging tests.
- ii) GFR of less than $60\text{ml}/1.7\text{m}^2$ for more than 3months, with or without damage.

CKD classification based on GFR estimation.¹

- Stage 1, kidney damage with normal or increased GFR of greater than 90ml/min
- Stage 2, kidney damage with mild decrease in GFR (60-89)
- Stage 3, kidney damage with moderate decrease in GFR (30-59)
- Stage 4, kidney damage with severe decrease in GFR (15-30)
- Stage 5, kidney failure less than 15ml/min

Evidence of chronic kidney damage may be any of the following:

- i) Persistent microalbuminuria
- ii) Persistent haematuria (after exclusion of other causes e.g. urological disease) Structural abnormalities of the kidneys demonstrated on ultrasound scanning or other radiological tests, e.g. polycystic kidney disease, reflux nephropathy. Shrunken kidneys on ultrasound
- iii) Persistent proteinuria
- iv) Biopsy proven chronic glomerulonephritis

The attention being paid globally to CKD is attributable to five factors: the rapid increase in its prevalence, the enormous cost of treatment, recent data indicating that overt disease is the tip of an iceberg of covert disease, an appreciation of its major role in increasing the risk of cardiovascular disease, and the discovery of effective measures to prevent its progression. These factors render CKD an important focus of health care planning even in the developed world, but the problems they delineate in the developing world are far more challenging. Some 85% of the world's population lives in low-income or middle-income countries, where the clinical, epidemiologic, and socioeconomic effects of the disease are expected to be the greatest.

Data from the United States suggest that for every patient with ESRD, there are more than 200 with overt chronic kidney disease (stage 3 or 4) and almost 5000 with covert disease (stage 1 or 2).²

Mortality, for CKD, is directly related to the technical and organizational competence of programs offering renal-replacement therapy. An estimated 11.5 percent of adults ages 20 or older (23 million adults) have

physiological evidence of CKD determined from data collected through the National Health and Nutrition Examination Survey in United State of America.³ Hospital based data in Nigeria have reported prevalence rates of between 1.6 and 8%⁴⁻⁷The most common causes of CKD in the developed world are diabetes mellitus and hypertension. However, in Nigeria, the commonest causes are hypertension and chronic glomerulonephritis.^{2, 8.}

Case Report

MO was a 58 year old married man. He was a farmer by profession and was referred from a private hospital to Federal Medical Centre Umuahia. He was apparently well until about 8 months prior to presentation when he started experiencing facial swelling, with associated bilateral leg swelling. He later developed dyspnoea, orthopnoea, paroxysmal nocturnal dyspnoea and cough productive of frothy sputum. Two weeks prior to presentation he started vomiting usually in the morning hours with associated hiccough, pruritus and occasional irrational behaviour. He was taken to a private hospital initially from where he was referred to us for expert management. He was told he had hypertension at the private hospital before referral to us

On examination he had a puffy face, moderately pale. There was bilateral pitting oedema on the lower limbs up to the sacrum. His weight was 60.08kg. The pulse rate was 126/min regular, jugular venous pressure was 8 centimeter water; blood pressure was 190/120 millimeter mercury. The apex was displaced and heaving. Heart sounds were S1, S2, and S4. He had fine basal crepitations. The liver span was 18cm, it was soft and tender. He was disoriented also had grade 2 hypertensive retinopathy and flapping tremor. The diagnosis was Uremia from CKD secondary to long standing Hypertension.

The ECG showed left axis deviation, and left ventricular hypertrophy. Chest X- ray showed Cardiomegaly with features of acute pulmonary oedema. Abdominal ultrasound showed shrunken kidneys. The creatinine was 6.9mg/dl; the urea was 160mg/dl. Calculated glomerular filtration rate (Cockcroft-Gault) was 9.12mls/minute. Urinalysis showed mild proteinuria, 24-hour urine protein was 0.3g. Haemoglobin level 9mg/dl. Echo showed concentric hypertrophy of the left ventricle.

Patient could not afford dialysis and was managed conservatively at the hospital. He was placed on intravenous frusemide 120mg daily, tablet Alpha methyl dopa 500mg three times daily, tablets Amlodipine 10mg daily, tablets calcium acetate, haematinics. He had malaria fever, and urinary tract infection, and was treated for these. The blood pressure was controlled; however, he died about 1 week later because he could not afford dialysis.

II. Discussion

There are many problems encountered by patients in Nigeria with CKD. The United States Institute of Medicine has recommended that female patients with chronic kidney disease should be referred to a nephrologist for initial consultation when their serum creatinine is 1.5mg/dl and male patients should be referred when their serum creatinine is 2.0mg/dl.⁹ Patient with GFR of less than 60ml/min should also be referred to the nephrologist for management. However, in developing countries like Nigeria, late referral is very common. Patients are usually referred to the nephrologist when they have stage 4 or 5 chronic kidney disease, and in most cases with features of uremia. This late referral is also experienced to a lesser extent, in developed countries of the world. In Europe approximately 30% of dialysis patients are referred late to the nephrologist in the final months preceding dialysis treatment.¹⁰ In Nigeria there is no available data on late referral from literature search. Early referrals to the nephrologists lead to better management of these patients and this helps to slow the progress to end stage renal failure. Late referral leads to the following;

- i) Increase use of haemodialysis over peritoneal dialysis
- ii) Poorer nutritional status, poorer patient's rehabilitation
- iii) Increased use of temporary vascular access, with associated increased access failure and increased morbidity.¹¹

CKD patient referred early to nephrologist also have the time to plan with their nephrologist for the creation of native Arterio-venous fistula (AVF), if they have chosen haemodialysis as the mode of treatment they prefer or can afford when they progress towards ESRD. It is widely accepted that the optimal vascular access device is the AVF.^{12, 13} Majority of patients undergoing dialysis in Nigeria make use of temporary form of vascular access mainly due to the following;

- i) late referral
- ii) few vascular surgeons skilled in the art of AVF creation in Nigeria
- iii) Cost, (it cost about twenty five thousand naira)

The contribution of primary care to outcome in patients with chronic kidney disease has not been demonstrated.^{14, 15} Given the magnitude of the rapid increase in the number of cases of chronic kidney disease,

primary care evaluation and timely referral are recommended. The KDOQI endorses a model of collaboration between primary health care physician and sub-specialist.¹⁵ Primary health care system is not well developed in Nigeria. Most communities do not have a primary health center and this makes it difficult to identify a large pool of people with chronic kidney disease and those at risk of developing the disease. Where the facility exists there is lack of doctors to effectively man the hospital. Our patient was diagnosed as having hypertension first time, when he presented with features of chronic kidney disease in a private hospital. Examination finding showed that he had features of long standing hypertension.

Patients with chronic kidney disease in Nigeria find it extremely difficult to afford dialysis. The cost of single session of haemodialysis in Nigeria is about twenty five thousand naira. A patient on chronic dialysis needs to be dialyzed at least three times a week. The minimum wage is less than twenty thousand naira, and a fresh graduate earns less than hundred thousand naira a month. Our patient makes less than twenty thousand naira a month and could not afford the cost of dialysis, and was managed conservatively.

Peritoneal dialysis is a long time treatment alternative for any patient with end-stage renal disease. Peritoneal dialysis has some medical advantages over haemodialysis in some circumstances. Initiation of haemodialysis in newly diagnosed end-stage kidney failure is associated with a rapid decline in what is left of kidney function. Treatment with peritoneal dialysis preserves native kidney function longer. This advantage has led several experts to recommend that peritoneal dialysis is the best modality to use early in the course of renal failure. There are some relative contraindications to peritoneal dialysis.¹⁶ Another advantage is that it can be carried out at home by the patient. Unfortunately, there are only very few centers in Nigeria where this service is offered. Where available it is also much more expensive than haemodialysis.

The anemia of chronic kidney disease is caused primarily by deficiency of erythropoietin. K/DOQI recommend a target haematocrit/haemoglobin of 33-36%/11-13mg/dl. This is supported by a number of studies that demonstrate that this haematocrit/haemoglobin level is associated with improved functional and cognitive status, improved quality of life, regression of left ventricular hypertrophy, and decreased morbidity and mortality when compared with patients with chronic renal failure and lower haematocrit and haemoglobin levels.¹⁷ A dose of erythropoietin of 50IU/kg of body weight three times weekly intravenously, during the later phase of dialysis is recommended for those on dialysis. With the dose titrated at monthly interval depending on the haematocrit response. Haemoglobin target should be reached in 3-4months (1g/dl per month). Maintenance dose is usually reduced to 50-75% of the initial dose. Erythropoietin is an expensive drug. It cost at least twenty two thousand naira (cheapest brand) for a pack of 6 vials. An 80kg man like our patient on dialysis will need a pack a week. This implies that our patients would have needed about eighty eight thousand naira to buy erythropoietin monthly. For predialysis patients, and patient on peritoneal dialysis, the 50IU/kg two times a week subcutaneously, is usually recommended, although some nephrologist may prefer 30IU. The cost is beyond the reach of average Nigeria with CKD.

Renal transplant is better treatment modality for end stage chronic kidney disease than dialysis because it corrects the endocrine function that is lost in patient with ESRD. Kidney transplant is a very expensive procedure. There are only about 3 centers in Nigeria that offer this service. Most patients that have undergone renal transplants had the procedure performed abroad. The cost of renal transplant offshore is about 7 million naira. Moreover, renal transplant patient are placed on immunosuppressive drugs for life. One of our renal transplant patients, a consultant surgeon, spends hundred thousand naira a month on immunosuppressive drugs. Nigerian nephrologists also lack facilities to adequately manage renal transplant patients.

III. Conclusion

The plight of chronic kidney disease patients in Nigeria is multifaceted, The prevailing poverty in the country, lack of government attention to those with chronic CKD, low of number of doctors in rural areas/ low number of nephrologist in the country and lack of facilities in the country to effectively manage these patients are major challenges encountered by those with CKD. They need help from the government and also from both local and foreign nongovernmental organizations.

References

- [1] National kidney foundation. K/DOQI clinical practice guidelines for chronic kidney disease: Evaluation, Classification and Stratification. Am J. kidney Dis 2002; 39: S1-S266.
- [2] Rashad S. Barsoum, M.D. Chronic Kidney Disease I in the Developing World. New England Journal of Medicine. 2006;354:997-999.
- [3] Levey AS, Stevens LA, Schmid CH, et al. A new equation to estimate glomerular filtration rate. Annals of Internal Medicine. 2009;150:604-612.

- [4] Akinsola W, Odesanmi WO, Ogunniyi JO, Ladipo GOA. Diseases causing chronic renal failure in Nigerians - a prospective study of 100 cases. *Afr J Med Sci.* 1989; 18:131–137.
- [5] Ogun SA, Adelowo OO, Familoni OB, Jaiyesimi AEA, Fakoya EAO. Pattern and outcome of medical admissions at the Ogun State University Teaching Hospital Sagamu - a three years review. *WAJM.* 2000; 19(4):304–308.
- [6] Analysis of medical admissions to Adeoyo state hospital Ibadan. *Nig Med J.* 1973; 3(1):5–12.
- [7] Oyediran AB, Akinkugbe OO. Chronic Renal Failure in Nigeria. *Trop Geog Med.* 1970; 22:41–45.
- [8] Ojogwu LI. The pathological basis of end stage renal disease in Nigerians: experience from Benin City. *West Afr Med.* 1990 Jul-Sept; 9(3):193-6
- [9] Wish JB. Management of patient with progressive renal failure. *Nephrology Secrets*, 2nd Edition. Editors, Hricik DE, Miller RT, Sedor JR. Elsevier India. Chapter 45: Page 171.
- [10] Lameire N, Van Biesen W. the pattern of referral of patients with end stage renal disease to the nephrologist-a Europe survey. *Nephrol Dial Transplant* 1999; 14: 16-23
- [11] Rodriguez JA, Armadans L, Ferrer E et al. The function of permanent vascular access. *Nephrol Dial Transplant* 2000; 15: 402-408
- [12] Ethier JH, Lindsay RM, Barre PE, Kappel JE, Carlisle EJ, Common A. Clinical practice guidelines for vascular access. *J Am Soc Nephrol* 1999, 10 (Suppl 13): S297-S305
- [13] NKF-K/DOQI Clinical Practice Guidelines for Vascular Access: updates 2000. *Am J Kidney Dis* 2001; 37(Suppl 1): S137-S181
- [14] Kinchen KS, Sadler J, Fink N, Brookmeyer R, Klag M, Levey AS, et al. The timing of specialist evaluation in chronic kidney disease and mortality. *Ann Intern Med* 2002; 137: 479-86
- [15] Levinsky NG. Specialist evaluation in chronic kidney disease: too little, too late. *Ann Intern Med* 2002; 137: 542-3.
- [16] Weiss FM. Technical Aspect of Peritoneal Dialysis. *Nephrology Secrets*, 2nd Edition. Editors, Hricik DE, Miller RT, Sedor JR. Elsevier India. Chapter 50; page 191.
- [17] Wish JB. Anemia associated with renal failure. *Nephrology Secrets*, 2nd Edition. Editors, Hricik DE, Miller RT, Sedor JR. Elsevier India. Chapter 43; page 164.