

A POPULATION-BASED STUDY ON CHRONIC KIDNEY DISEASE IN KANYAKUMARI GOVERNMENT MEDICAL COLLEGE

Ponnaian John Christopher¹, Sankar Selvaraj², Brinda³, Benitta Mary Redleene⁴, Chandrashekar Madhu⁵

¹Associate Professor, Department of General Medicine, Kanyakumari Government Medical College, Kanyakumari.

²Assistant Professor, Department of General Medicine, Kanyakumari Government Medical College, Kanyakumari.

³Assistant Professor, Department of General Medicine, Kanyakumari Government Medical College, Kanyakumari.

⁴Junior Resident, Department of General Medicine, Kanyakumari Government Medical College, Kanyakumari.

⁵Junior Resident, Department of General Medicine, Kanyakumari Government Medical College, Kanyakumari.

ABSTRACT

BACKGROUND

Chronic kidney disease encompasses a spectrum of different pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate. Our study deals with the risk factors, stages and the management among the general population of Kanyakumari district who came to Kanyakumari Government Medical College during the period of 2014-2015.

MATERIALS AND METHODS

The newly-diagnosed CKD patients who were admitted as inpatients in the Department of General Medicine in the period of 2014-2015 were studied retrospectively. Those who came as outpatients as well as previously diagnosed ESRD patients who had repeated admissions for maintenance haemodialysis were excluded from our study. We documented the age, sex, previous history of diabetes, hypertension, the mean duration of diabetes or hypertension, eGFR of the patient, stage of CKD and the treatment given.

RESULTS

The number of CKD patients admitted in our hospital during 2014-2015 were 314 of which newly detected CKD cases were 212. The most frequent cause of CKD in this population is diabetic nephropathy secondary to type 2 diabetes mellitus (90%). CKD is most common among males in this population. The mean age of association of diabetes in this population is 9-12 years. Patients with newly-diagnosed CKD often present with hypertension. eGFR was calculated for all CKD patients by Cockcroft-Gault Equation. 18 out of 212 newly-diagnosed CKD patients (8.5%) presented with ESRD (eGFR <15 mL/min./1.73 m²) and haemodialysis was initiated. Most evident complications among this patients were anaemia, easy fatigability, decreased appetite, progressive malnutrition and electrolyte abnormalities.

CONCLUSION

Diabetes, glomerulonephritis and hypertension associated CKD are the leading categories of aetiologies of CKD. When no overt evidence for a primary glomerular disease or tubulointerstitial disease process is present, CKD is often attributed to hypertension. Such individuals can be considered under two categories- 1) Silent primary glomerulopathy; 2) Systemic vascular disease. Early identification of such conditions are necessary so as to halt or delay the progress of kidney disease.

KEYWORDS

Chronic Kidney Disease, Diabetic Nephropathy, Glomerular Filtration Rate.

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BACKGROUND

Chronic kidney disease affects 5-7% of the world population and is more common in developing countries.^(1,2) Early detection and treatment of CKD can prevent progression to

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Corresponding Author:

*Dr. Benitta Mary Redleene,
Junior Resident, Department of General Medicine,
Kanyakumari Government Medical College,
Kanyakumari.*

*E-mail: beniredleene@gmail.com
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end-stage renal disease. Interventions targeting CKD particularly to reduce urine protein excretion are efficacious, cost-effective methods of improving cardiovascular and renal outcomes, especially when applied to high-risk groups. Integration of these approaches could minimise the need for renal replacement therapy. Early detection and treatment of CKD should be implemented, which will reduce the burden of ESRD, improve outcomes of diabetes and cardiovascular disease and substantially reduce morbidity and mortality.

OBJECTIVES

1. To obtain the risk factors associated with CKD among newly-diagnosed CKD patients.

- To categorise the patients into different stages based on eGFR.
- The management aspect based on the eGFR.

MATERIALS AND METHODS

The newly detected CKD patients who were admitted as inpatients in the Department of General Medicine during 2014-2015 were studied retrospectively. Those who came as outpatients as well as previously diagnosed ESRD patients who were on maintenance haemodialysis were excluded from our study. We documented the age, sex, previous history of diabetes, hypertension, the mean duration of diabetes or hypertension, eGFR and the treatment given.

RESULTS

The number of newly-detected CKD cases were 212 during the period of 2014-2015. CKD is most common among males (54%) in this population as shown in Figure 1.1. The most frequent cause of CKD among this population as in any other population is diabetic nephropathy⁽³⁾ secondary to type 2 diabetes mellitus⁽⁴⁾ (approximately 90% of patients). The mean age of association of diabetes in this CKD population is 9-12 years as shown in Figure 1.2. Some rare entities like autosomal polycystic kidney disease as a cause of CKD is noted in 0.9% and IgA nephropathy and multiple myeloma contributes 0.4% each as a cause for ESRD in this population. Based on Cockcroft-Gault Equation,⁽⁵⁾ the patients are classified based on the eGFR as follows as seen in Figure 1.3. Majority of cases are in stage III as seen in other population. 18 out of 212 newly-diagnosed patients (8.5%) presented with ESRD (eGFR <15 mL/min./1.73 m²) and were started on maintenance haemodialysis.⁽⁶⁾ 6 out of 212 (2.8%) patients were willing for renal transplantation and were referred to higher centre. This is seen in Figure 1.4.

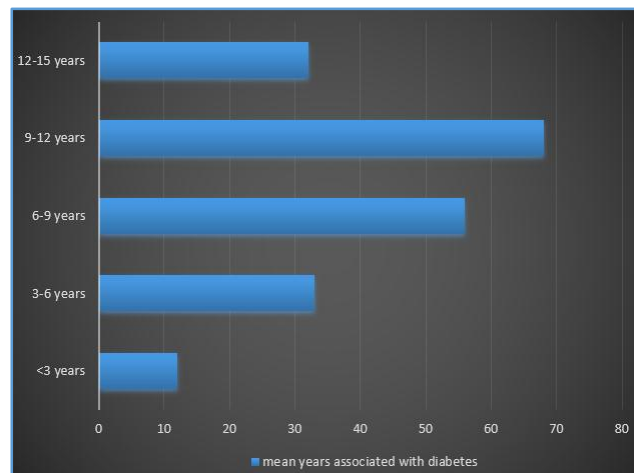


Figure 1.2. Mean Years Associated with Diabetes in CKD



Figure 1.3. Classification of Newly-Diagnosed CKD Patients Based on eGFR

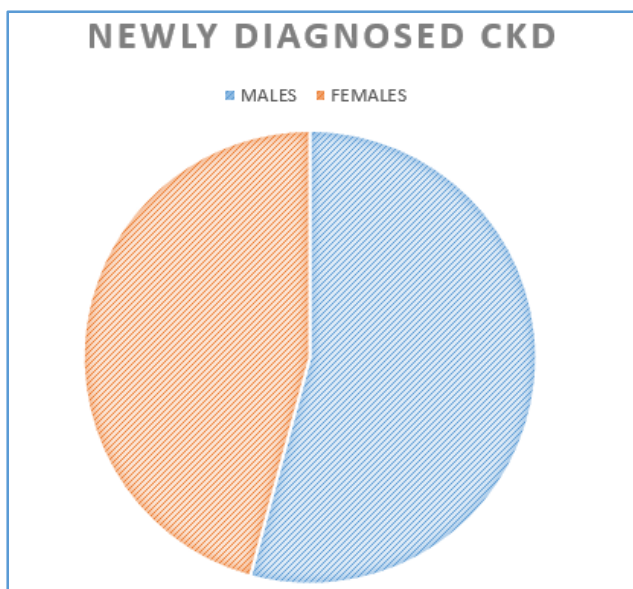


Figure 1.1. Percentage of Newly-Detected CKD in 2014-15

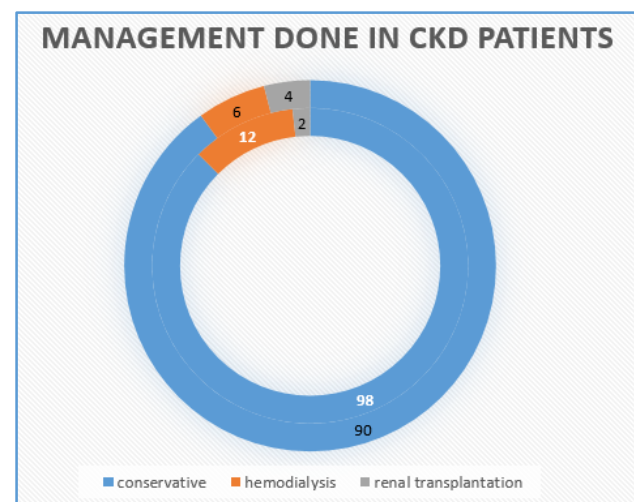


Figure 1.4. Management Done in Newly-Diagnosed CKD Patients During 2014-15 in KGMCH

DISCUSSION

Chronic kidney disease occurs when one suffers from gradual and usually permanent loss of kidney function over time. This happens gradually usually over months to years. The Kidney Disease Outcomes Quality Initiative (KDOQI) of the National Kidney Foundation established a definition and

classification of CKD in 2002.⁽⁷⁾ The guidelines define CKD as either kidney damage or a decreased glomerular filtration rate of less than 60 mL/min./1.73m² for at least 3 months. Whatever the underlying aetiology, once the loss of nephrons and reduction of functional renal mass reaches a certain point, the remaining nephrons begin a process of irreversible sclerosis that leads to a progressive decline in the GFR.

Staging

The different stages of CKD are classified as follows.⁽⁸⁾

- Stage I- Kidney damage with normal or increased GFR (>90 mL/min./1.73 m²).
- Stage II- Mild reduction in GFR (60-89 mL/min./1.73 m²).
- Stage IIIa- Moderate reduction in GFR (45-59 mL/min./1.73 m²).
- Stage IIIb- Moderate reduction in GFR (30-44 mL/min./1.73 m²).
- Stage IV- Severe reduction in GFR (15-29 mL/min./1.73 m²).
- Stage V- Kidney failure (GFR<15 mL/min./1.73 m²).

In stage I and stage II CKD, reduced GFR alone does not clinch the diagnosis, because the GFR may in fact be normal or borderline normal. In such cases, the presence of one or more of the following markers of kidney damage can establish the diagnosis.⁽⁸⁾

- Albuminuria >30 mg/24 hrs. or albumin:creatinine ratio >30 mg/g.
- Urine sediment abnormalities.
- Electrolyte and other abnormalities due to tubular disorders.
- Histologic abnormalities.
- Structural abnormalities detected by imaging.

Patients with stages I-III CKD are frequently asymptomatic. Clinical manifestations resulting from low kidney function typically appear in stages IV-V. The clinical features associated with CKD are;

- Loss of lean body mass.
- Muscle weakness.
- Peripheral oedema.
- Pulmonary oedema.
- Hypertension.
- Fatigue.
- Reduced exercise capacity.
- Reduced quality of life.
- Development of cardiovascular disease.

Other manifestations of uraemia⁽⁹⁾ in end-stage renal disease many of which are more likely in patients who are being inadequately dialysed include the following-

- Uraemic pericarditis.
- Encephalopathy.
- Peripheral neuropathy.
- Restless leg syndrome.

- Gastrointestinal symptoms- Anorexia, nausea, vomiting and diarrhoea.
- Skin manifestations- Dry skin, pruritus and ecchymosis.
- Fatigue, increased somnolence and failure to thrive.
- Malnutrition.
- Erectile dysfunction, decreased libido and amenorrhoea.
- Platelet dysfunction with tendency to bleed.

CONCLUSION

CKD is associated with an eight to tenfold increase in cardiovascular mortality⁽¹⁰⁾ and is a risk multiplier in patients with diabetes and hypertension. The most frequent cause of CKD among Kanyakumari District population as in any other population is diabetic nephropathy. Early detection and treatment of CKD using readily available inexpensive therapies can slow or prevent progression to End-Stage Renal Disease (ESRD). Early detection and treatment of CKD can be implemented at minimal cost and will reduce the burden of ESRD. So, routine screening for renal function in high-risk patients especially in diabetic and hypertensive patients should be made mandatory.

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