

CO-MORBIDITIES AND THEIR MANAGEMENT IN PATIENTS WITH CHRONIC KIDNEY DISEASE IN A TERTIARY HOSPITAL OF KERALA

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ABSTRACT

BACKGROUND

To manage patients with Chronic Kidney Disease (CKD) optimally, it requires appropriate knowledge of markers and stages of CKD and early disease recognition. Replacing the terms such as Chronic Kidney Disease (CKD), chronic renal insufficiency, chronic renal disease, chronic renal failure, the National Kidney Foundation, Kidney Disease Outcomes Quality Initiative has defined the all-encompassing term, CKD. An understanding of Estimated Glomerular Filtration (eGFR) is required as it is still considered the best overall index of kidney function in stable, non-hospitalised patients. There are multiple risk factors and co-morbid diseases, which modify the natural course and prognosis of CKD and alter the necessity to change the management. The present study is conducted to study the co-morbidities in patients with CKD.

The aim of the study is to study the co-morbidities in patients with chronic kidney disease.

MATERIALS AND METHODS

This study was a retrospective observational study on consecutive new patients with CKD who attended the dialysis unit of a tertiary teaching hospital in northern part of Kerala. 89 consecutive new patients with CKD who attended the dialysis unit of a tertiary teaching hospital were included. Co-morbid diseases, demographic data and eGFR were recorded.

RESULTS

Out of 89 patients, 63 were males and the remaining 26 were females. Patients belonged to the age group ranging from 35 to 80 years with a mean age of 54.42 ± 6.30 . Among the various causes of primary kidney diseases, diabetic nephropathy was found in 47/89 (52.80%) of the patients, chronic glomerulonephritis in 19/89 (21.34%), hypertensive nephropathy in 8/89 (8.98%).

CONCLUSION

Among the various causes of primary kidney diseases, diabetic nephropathy was found to be the commonest followed by chronic glomerulonephritis in this study. Among the co-morbid conditions, co-morbid diabetes mellitus was observed the commonest, hypertension presenting the form of myocardial infarction, CVA, chronic pulmonary disease, congestive heart failure and peripheral vascular disease.

KEYWORDS

CKD, GFR, Diabetes Mellitus, Chronic Glomerulonephritis, Dialysis, Co-Morbid Disease.

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BACKGROUND

There is an increase in the Chronic Kidney Disease (CKD) all over the world. Clinical data from USA show an increase in the trend of CKD and End-Stage Renal Disease (ESRD). The prevalence rate of CKD and ESRD grew most quickly among the patients aged above 65 years.¹ The definition of CKD according to the Kidney Disease Improving Global Outcomes (KDIGO) is either damage to kidneys or a Glomerular

Filtration Rate (GFR) of <60 mL/min. per 1.73 m² for a period of ≥ 3 months with implications for health. Kidney damage can be defined by structural (detected by imaging) or functional abnormalities of the kidneys with or without a decrease in GFR. These maybe apparent as either pathological irregularities or as indicators of kidney damage, which include albuminuria >30 mg/dL, urine sediment abnormalities and electrolyte and other abnormalities secondary to tubular disorders.² A significant number of them have co-morbidities such as diabetes mellitus and cardiovascular diseases and patient survival is poor in spite of dialysis due to poor functional abilities at the commencement of dialysis.³ It has also been observed in literature that patients with extensive co-morbidities do not live longer even dialysis as compared to patients treated conservatively.⁴ Moreover, these patients require frequent admissions to stabilise their haemodynamics and die during

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such admissions.⁴ The age of the patient in addition to co-morbidities also plays a significant role in improving the functional status of kidney, which declines as reported in recent studies.⁵ Although, it is possible to slow the progression of CKD during its early stages, CKD-related risk factors (e.g., hyperglycaemia and hypertension) and co-morbidities become less manageable as CKD inevitably progresses resulting in a life expectancy that decreases in parallel with decreasing kidney function.⁶ The present study was conducted to observe the various co-morbidities of CKD and their management in a tertiary hospital of Kerala.

AIM OF THE STUDY

To study the co-morbidities in patients with chronic kidney disease and their management.

MATERIALS AND METHODS

The present study was a retrospective observational study on consecutive new patients with CKD who attended the dialysis unit of a tertiary teaching hospital in northern part of Kerala. The study period is between June 2011 and May 2013.

Inclusion Criteria

1. Patients with Glomerular Filtration Rate (GFR) <15 mL/min./1.73 m² for patients with diabetes mellitus, or <10 mL/min./1.73 m² for patients without diabetes mellitus.
2. Patients with all types of co-morbidities were included.

Exclusion Criteria

Patients with premature referral for Renal Replacement Therapy (RRT) assessment due to higher GFR (non-diabetic patient with GFR >10 mL/min./1.73 m² or diabetic patient with GFR >15 mL/min./1.73 m². Patients with acute renal disease; there was no age limitation in selection of patients. Demographic data, primary renal condition, co-existing medical diseases, laboratory data and calculated GFR were recorded. Symptomatology of the patients was also recorded. Standard statistical methods were used to analyse the data.

OBSERVATIONS AND RESULTS

There were 105 new chronic kidney disease stage IV and V patients (GFR 15 to 20 mL/min./1.73 m², <15 mL/min./1.73 m², respectively) referred to the nephrologists of the institute for renal assessment and if possible for dialysis/RRT. 11 were found to have been prematurely referred for assessment. 6 patients were found to have acute on chronic renal disease with failure. They were excluded from analysis. The remaining 89 patients were included in the study. Out of 89 patients, 63 were males and the remaining 26 were females. Patients belonged to the age group ranging from 35 to 80 years with a mean age of 54.42 ± 6.30. Among the various causes of primary kidney diseases, diabetic nephropathy was found in 47/89 (52.80%) of the patients, chronic glomerulonephritis in 19/89 (21.34%), hypertensive nephropathy in 8/89

(8.98%), rapidly progressive glomerulonephritis in 5/89 (5.61%), systemic lupus in 4 (4.49%), obstructive uropathy in 4 (4.49%) and renal malignancy in 2/89 (2.24%) patients (Table 1).

Primary Disease of the Kidney	Male- 63	Female- 26
Diabetic nephropathy- 47	31	16
Chronic glomerulonephritis- 19	16	3
Hypertensive nephropathy- 8	5	3
Rapidly progressive glomerulonephritis- 5	4	1
Systemic lupus- 4	2	2
Obstructive uropathy- 4	3	1
Renal malignancy- 2	2	0

Table 1. Showing the Sex Incidence of Different Primary Diseases of the Kidney in the Study (n-89)

The age range in the study was 35 to 80 years with a mean age of 54.42 ± 6.30. Diabetic nephropathy was observed in almost equally in all the age groups that is 17.97% in 35 to 50 years group, 21.34% in 51 to 65 years age group and 13.48% in the 66 to 80 years age group (Table 2). The age wise distribution of primary renal cause of CKD in the study is shown in Table 2.

Primary Disease of the Kidney	35 to 50 Yrs.	51 to 65 Yrs.	66 to 80 Yrs.
Diabetic nephropathy	16	19	12
Chronic glomerulonephritis	07	05	07
Hypertensive nephropathy	02	02	01
Rapidly progressive glomerulonephritis	01	02	01
systemic lupus	01	01	02
Obstructive uropathy	02	01	01
Renal malignancy	00	01	01

Table 2. Showing the Age Incidence Among the Primary Cause of CKD (n-89)

Among the 89 patients evaluated by the nephrologists of the dialysis unit, 50 patients were managed by dialysis owing to their GFR and the remaining 39 patients were given supportive therapy to manage the CKD. Among the co-morbid conditions, co-morbid diabetes mellitus was observed in 47 patients and that being the primary cause of CKD also. Myocardial infarction was found in 5 patients, CVA in 6 patients, chronic pulmonary disease in 6 patients, congestive heart failure in 3 patients, anaemia in 5 patients and peripheral vascular disease in 9 patients (Table 3). 23 patients (25.84%) were found to have a hypertensive aetiology in the form of co-morbid diseases like myocardial infarction (5), CVA (6), peripheral vascular disease (9) and congestive heart failure (3), (Table 3). Among the 89 patients, 50 patients were undergoing dialysis during the period of this study and the remaining 39 patients were given supportive management (Table 3).

Co-Morbid Disease	Dialysis- 50	Supportive Management- 39
Co-morbid diabetes mellitus	28	19
Myocardial infarction	4	1
Cerebrovascular accident	3	3
Chronic pulmonary disease	4	2
Peptic ulcer disease	2	2
Congestive heart failure	1	2
Connective tissue diseases	1	1
Peripheral vascular disease	4	5
Anaemia	2	3
Malignancy	1	1

Table 3. Showing the Various Co-Morbid Diseases and Management Adopted in the Study Group (n-89)

DISCUSSION

Even though, life prolonging treatments such as dialysis are available for patients with CKD with renal failure, it may be difficult to predict as to who will benefit and survive from dialysis. Prediction of prognosis is difficult especially in the presence of co-morbid conditions making it hard to decide for both patient's attendants and the doctors to proceed with the dialysis. In few of them, the quality of life may not improve with dialysis due to co-morbid conditions. Prior to starting dialysis or supportive treatment without dialysis, a hard decision has to be made among patients, family members, renal physicians and supportive nursing staff. The available dialysis types; continuous ambulatory peritoneal dialysis, automated peritoneal dialysis and haemodialysis and non-dialysis supportive management with end-of-life care should always be discussed in detail during counseling.⁷ The prevalence of CKD among individuals older than 65 years ranged from 5.8 to 51% in different international studies. There is exponential increase in the incidence of CKD with age.^{8,9} Among the co-morbid conditions in the present study, co-morbid diabetes mellitus was observed in 47 patients and that being the primary cause of CKD also. The presence of diabetes mellitus was significantly higher among patients with CKD with a wide range starting from 25.3% to 5.05%. In fact, the prevalence of diabetes among chronic kidney patients has been higher than that of individuals without CKD.¹⁰ 23 patients (25.84%) were found to have a hypertensive aetiology in the form of co-morbid diseases like myocardial infarction 5 patients, CVA 6 patients, peripheral vascular disease 9 patients and congestive heart failure 3 patients, (Table 3). High blood pressure was considered as an ubiquitous disease in CKD; because, besides being itself, the most important cause for the CKD, its onset and development, high blood pressure is a result of CKD also.¹¹ Congestive heart failure was found in 3 patients in this study as a co-morbid disease. Although, the decrease in cardiac output brought about by the disease

itself or its treatment can participate in the genesis of progressive kidney damage.¹² It should be noted that the main causes of congestive heart failure are hypertension and ischaemia both closely associated with arterial hypertension.¹³ In the present study, stage IV to V of CKD were included. Stratification of CKD into 5 stages focuses the clinician on CKD management aspects. The metabolic abnormalities of CKD evolve in a fairly well-established pattern. Anaemia of CKD and CKD-Mineral and Bone Disorder (CKD-MBD) often begin during stage III. Hypertension is aggravated in CKD stages III-V and acid-base balance, dyslipidaemia and glucose homeostasis become deranged later. During stages III-V, reductions in medication dosages maybe required because of a lower eGFR. The disease domains of HTN, proteinuria and hyperlipidaemia may appear at any stage and therapy must be targeted to specific levels. Lastly, screening for metabolic complications of CKD is typically not recommended in persons with eGFR >60 mL/min./1.73 m² and no albuminuria, unless a genetic disorder with a high degree of penetrance is present (autosomal dominant polycystic kidney disease).¹⁴ Anaemia was found in 5/89 patients in this study. Anaemia of CKD usually begins during CKD stage III, i.e., GFRs <60 mL/min./1.73 m². Anaemia occurs in 42%, 54% and 62% of stage II, III and IV disease of CKD and is more severe in diabetes mellitus.¹⁵

CONCLUSION

Among the various causes of primary kidney diseases, diabetic nephropathy was found to be the commonest followed by chronic glomerulonephritis in this study. Among the co-morbid conditions, co-morbid diabetes mellitus was observed the commonest, hypertension presenting the form of myocardial infarction, CVA, chronic pulmonary disease, congestive heart failure and peripheral vascular disease.

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