

Comorbidities and their Management in Patients with Chronic Kidney Disease in a Tertiary Hospital of Kerala

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Abstract

Introduction: 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 renal insufficiency, chronic renal disease, chronic renal failure the, the National kidney foundation kidney disease outcomes quality initiative, has defined the all encompassing term as CKD. An understanding of estimated glomerular filtration (e GFR) is required as it is still considered the best overall index of kidney function in stable, non-hospitalized patients. There are multiple risk factors and comorbid 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 comorbidities in patients with CKD.

Aim of the Study: The aim of the study was to study the comorbidities in patients with CKD.

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 the northern part of Kerala. 89 consecutive new patients with CKD, who attended the dialysis unit of a tertiary teaching hospital, were included. Comorbid diseases, demographic data, and e GFR, were recorded.

Observations and 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%), and hypertensive nephropathy in 8/89 (8.98%).

Conclusions: Among the various causes of primary kidney diseases diabetic nephropathy was found to be the most common followed by chronic glomerulonephritis in this study. Among the comorbid conditions, comorbid diabetes mellitus was observed the most common, hypertension presenting the form of myocardial infarction, Cerebro Vascular Accident (CVA), chronic pulmonary disease, congestive heart failure, and peripheral vascular disease.

Key words: Chronic kidney disease, Dialysis and comorbidities, End-stage renal disease, Glomerular filtration rate

INTRODUCTION

There is an increase in the chronic kidney disease (CKD) all over the world; clinical data from the 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 is either damage to kidneys or a glomerular filtration rate (GFR) of <60 mL/min per 1.73 m² for a period of ≥ 3 mo, 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 may be apparent as either pathological irregularities or as indicators of kidney damage which include albuminuria >30 mg/d, urine sediment abnormalities and electrolyte,

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and other abnormalities secondary to tubular disorders.^[2] A significant number of them have comorbidities 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 the literature that patients with extensive comorbidities do not live longer even dialysis as compared to patients treated conservatively.^[4] Moreover, these patients require frequent admissions to stabilize their hemodynamics and die during such admissions.^[4] The age of the patient in addition to comorbidities 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., hyperglycemia and hypertension) and comorbidities 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 comorbidities of CKD and their management in a tertiary hospital of Kerala.

Aim of the Study

The aim of the study was to study the comorbidities in patients with CKD 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 the northern part of Kerala. The study period is between June 2011 and May 2013.

Inclusion Criteria

1. Patients with 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 comorbidities were included.

Exclusion Criteria

1. 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).
2. Patients with acute renal disease; there was no age limitation in selection of patients.

Demographic data, primary renal condition, coexisting medical diseases, laboratory data, and calculated GFR were recorded. Symptomatology of the patients was also recorded. Standard statistical methods were used to analyze the data.

OBSERATIONS AND RESULTS

There were 105 new CKD Stage 4 and 5 patients (GFR 15 to 20 mL/min/1.73m², <15 mL/min/1.73m², 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].

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

Among the 89 patients evaluated by the nephrologists of the dialysis unit 50 patients were managed by dialysis due to their GFR and the remaining 39 patients were given supportive therapy to manage the CKD. Among the comorbid conditions, comorbid 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, anemia in 5 patients, and peripheral vascular disease in 9 patients [Table 3]. 23 patients (25.84%) were found to have a hypertensive etiology in the form of comorbid diseases

Table 1: The sex incidence of different primary diseases of the kidney in the study (n=89)

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

such as myocardial infarction,^[5] CVA,^[6] peripheral vascular disease,^[7] 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].

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 comorbid 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 comorbid conditions. Before 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 hemodialysis) and non-dialysis supportive management with end-of-life care

Table 2: The age incidence among the primary cause of CKD (n=89)

Primary disease of the kidney	35–50 years	51–65 years	66–80 years
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 3: The various comorbid diseases and management adopted in the study group (n=89)

Comorbid disease	Dialysis - 50	Supportive management-39
Comorbid 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
Anemia	2	3
Malignancy	1	1

should always be discussed in detail during counseling.^[8] The prevalence of CKD among individuals older than 65 years ranged from 5.8 to 51% in different international studies. There is an exponential increase in the incidence of CKD with age.^[7,9] Among the comorbid conditions in the present study, comorbid 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 etiology in the form of comorbid diseases such as 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 a 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 comorbid 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 ischemia, both closely associated with arterial hypertension.^[13] In the present study stage, 4 to 5 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. Anemia of CKD and CKD-mineral and bone disorder often begin during Stage 3. Hypertension is aggravated in CKD Stages 3–5 and acid-base balance, dyslipidemia, and glucose homeostasis become deranged later. During Stages 3–5, reductions in medication dosages may be required because of a lower estimated GFR (eGFR). The disease domains of HTN, proteinuria, and hyperlipidemia may appear at any stage and therapy must be targeted to specific levels. Finally, 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] Anemia was found in 5/89 patients in this study. Anemia of CKD usually begins during CKD Stage 3, i.e., GFRs <60 mL/min/1.73m². Anemia occurs in 42%, 54%, and 62% of Stage 2, 3, and 4 disease of CKD and is more severe in diabetes mellitus.^[15]

CONCLUSIONS

Among the various causes of primary kidney diseases diabetic nephropathy was found to be the most common

followed by chronic glomerulonephritis in this study. Among the comorbid conditions, comorbid diabetes mellitus was observed the most common, hypertension presenting the form of myocardial infarction, CVA, chronic pulmonary disease, congestive heart failure, and peripheral vascular disease.

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