

Clinical and Etiological Profile of Chronic Kidney Disease in a Tertiary Care Hospital in Seemanchal Region of Bihar

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Received: November 2020

Accepted: December 2020

ABSTRACT

Background: Chronic Kidney Disease (CKD) is a progressive disease characterized by a decreasing ability of the kidney to maintain a normal low level of protein metabolites (urea), normal blood pressure, haematocrit, electrolytes, water and acid-base balance. **Methods:** One hundred and eight patients of CKD of either sex above the age of 15 years who were on haemodialysis and consented to participate were included in this study. This was a prospective and observational hospital-based study. CKD was defined as kidney damage \geq 3 months with eGFR $<$ 60ml/min/1.73m². **Results:** 61% of cases of CKD were in the age group between 20-79 years with approximately 63% being males. The most common aetiology was diabetic nephropathy and most common symptom was anorexia. **Conclusion:** In Seemanchal region of Bihar, the leading cause of CKD has been observed to be diabetic nephropathy, chronic glomerulonephritis and hypertension.

Keywords: Anorexia, Chronic Kidney Disease, Diabetic Nephropathy, Hypertension.

INTRODUCTION

Chronic kidney disease (CKD) encompasses a spectrum of pathophysiologic processes associated with abnormal kidney function and a progressive decline in glomerular filtration rate (GFR).^[1] CKD is divided into five stages.^[2] Until the fourth stage of the disease, conservative treatment is recommended. End-Stage Renal Disease (ESRD), the most advanced stage, when the kidneys can no longer maintain homeostasis of the body, the patient will depend on dialysis or kidney transplant.^[3] The cause of CKD is unclear in majority of cases, however renal biopsy could help to reach aetiology in most case. The cause of CKD depends on presence or absence of underlying systemic diseases and location of known or presumed pathologic abnormalities (glomerular, tubule-interstitial, vascular or cystic and congenital diseases).^[2]

Kidney damage for $>$ 3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased GFR, manifest by either Pathologic abnormalities; or markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests.

GFR $<$ 60 ml/min/1.73m² for $>$ 3 months, with or

without kidney damage. To facilitate assessment of CKD severity, the National Kidney Foundation (NKF K/DOQI) developed criteria to stratify CKD patients:^[4]

Stage 1: eGFR $>$ 90 mL/min per 1.73 m² and persistent albuminuria

Stage 2: eGFR between 60 to 89 mL/min per 1.73 m²

Stage 3: eGFR between 30 to 59 mL/min per 1.73 m²

Stage 4: eGFR between 15 to 29 mL/min per 1.73 m²

Stage 5: eGFR $<$ 15 mL/min per 1.73 m² or end-stage renal diseases.

The global incidence of End Stage Renal Disease (ESRD) is increasing at an annual growth rate of 8% while in India almost 100000 new ESRD patients are added every year.^[5,6]

In ESRD patient's haemodialysis should be done at least twice per week. However most of the Indian patients do not afford the cost of hemodialysis and succumb to the disease. More widespread effort at the prevention, early detection, evaluation, and management of CKD and antecedent conditions could prevent complications of decreased kidney function, slow the progression of kidney disease to kidney failure, and reduce cardiovascular disease risk.^[7]

Toxic, environmental and occupational risk factors are common in poor population. Other CKD risk factors are chronic use of drugs such as NSAIDs, nephrotoxic antibiotics, and sequelae of acute damage from poisoning, hypovolemia, obstruction or other causes. The present study aimed to study the

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aetiology and it's relation to clinical and laboratory profile of chronic kidney disease.

MATERIALS AND METHODS

- (1) Material and methods-this was hospital based study of patients with CKD admitted to Mata Gujri Memorial medical college Hospital, Kishanganj from August 2019 to August 2020. One hundred eight CKD patients above 15 years of age on renal dialysis, and willing to participate in the study were enrolled in this study.
- (2) Those who did not give informed consent, or had severe cognitive, speech or hearing defect were excluded from this study. Socio-demographic data and clinical data, personal history and laboratory investigations finding were recorded.
- (3) CKD was defined as kidney damage \geq 3 months with eGFR $<$ 60 ml/min/1.73 m² and or structural or functional abnormalities in pathology, imaging, urine analysis, blood composition indicating abnormal kidney function.
- (4) **Inclusion criteria included:**
 - Either sex
 - Aged \geq 15 years,
 - Diagnosed cases of CKD
 - Serum creatinine $>$ 2.0 mg/dl
- (5) **Exclusion criteria:**
 - Pregnant women;
 - Severe cognitive, speech or hearing defect.
 - Patients taking concurrent corticosteroids, ciclosporin, and/or other chemotherapy.
 - Patients with a history of drug or alcohol abuse.
 - All the patients who have already undergone renal transplants were excluded.

RESULTS

This study included 108 patients with age ranging from $<$ 20 to $>$ 79 years, Table-1 show majority of patients were aged between 50 to 69 years (n=66, 61.11%) only one patient 0.92% admitted with chronic kidney disease of the age group between $<$ 20 years. Sixty-eight patients (62.96%) were male and 40 patients (37.03%) were female [Table 2].

Table 1: Age distribution of patients of CKD.

Age(Years)	No	Percentage
$<$ 20	1	0.92
20-29	2	1.85
30-39	5	4.62
40-49	13	12.03
50-59	32	29.62
60-69	34	31.48
70-79	15	13.88
$>$ 79	6	5.55

Table 2: Sex distribution of patients of CKD.

Gender	No	Percentage
Male	68	62.96
Female	40	37.03

[Table 3] show the most common etiology of CKD was Diabetic Nephropathy (n=41; 37.96%), followed by Chronic Glomerulonephritis (N=72; 66.60%) then Hypertension (n=16; 14.81%), and Chronic Interstitial Nephritis (n=11; 10.18%). The least common etiology of CKD was Systemic lupus erythematosus (n=01; 0.92%).

The most common symptoms of CKD was Anorexia (n=46; 69.69%), followed by Oliguria (no=68; 62.96%) and Generalized was (no=58; 53.70%) of patients. The least common symptom was convulsion (no=4; 3.70%) [Table 4].

Table 3: Etiological diagnosis of the CKD patients.

Etiology	No	Percentage
Diabetic nephropathy	41	37.96
Chronic Glomerulonephritis	22	20.37
Hypertension	16	14.82
Chronic Interstitial nephritis	11	10.18
Obstructive Uropathy	8	7.41
Renal Artery Stenosis	5	4.63
Drug Induced Nephropathy	4	3.71
SLE	1	0.92

Table 4: Clinical symptoms of CKD Patients

Symptoms	No	Percentage
Anorexia	72	66.66
Oliguria	68	62.96
Generalized weakness	58	53.70
Dyspnea	46	42.60
Nausea	36	33.34
Facial puffiness	32	29.62
Altered sensorium	12	11.11
Abdominal pain	10	9.26
Polyuria	6	5.56
Convulsions	4	3.70

[Table 5] show, that the pedal edema developed in 92 patients (85.18%) of CKD. Pallor developed in 89 patients (82.41%) out of 108 patients of CKD. Pleural effusion developed in 36 patients (33.33%) out of 108 patients of CKD. Only 6 patients (5.56%) developed peripheral Neuropathy and urgency of micturition.

Table 5: Clinical signs of CKD Patients

Signs	No	Percentage
Pedal edema	92	85.18
Pallor	89	82.41
Pleural effusion	36	33.34
Ascites	32	29.63
Pulmonary edema	24	22.23
Pruritus	22	20.37
Weight loss	18	16.67
Pericardial effusion	10	9.26
Peripheral Neuropathy	6	5.56
Urgency	6	5.56

Table 6: Distribution of Haemoglobin among study population

Hb-gm/dl	Male	Female
$<$ 5	24 (22.22%)	14 (12.96%)
5-10	30 (27.78%)	18 (16.67%)
$>$ 10	14 (12.96%)	08 (7.40%)

[Table 6] shows that 30 (27.77%) male and 18 (16.66%) female CKD patients having hemoglobin between 5-10 gm/dl. Only 14 (12.96%) Male and 08 (7.40%) female patients having Hb >10 gm/do. Fourty six (42.59%) patients having blood urea between 100-200 mg/dl and only 12 (11.11%) patients having blood urea >300mg/dl showing in [Table 7].

[Table 8] shows that 49 (45.37%) patients having serum creatinine between 5-10mg/dl. Only two (1.85%) patients having serum creatinine >20mg/dl.

Table 7: Distribution of Blood urea among study population

Blood Urea(mg/dl)	No of cases	Percentage
<100	22	20.37
100-200	46	42.60
200-300	28	25.92
>300	12	11.11

Table 8: Distribution of serum creatinine among study population.

Serum creatinine	No of cases	Percentage
<5	16	14.81
5-10	49	45.37
10-15	26	24.08
15-20	15	13.89
>20	02	1.85

DISCUSSION

In this study, majority of patients were in the age group of 50-69 years. Modi et al.^[8] found mean age was 47 years their study. The prevalence of CKD increases with age.^[9] In our study males (62.96%) were predominant than females (37.03%) which was concordant with the other studies.^[10,11]

Regarding etiology of CKD, Diabetic nephropathy was the most common cause of CKD (37.96%) followed by chronic glomerulonephritis (20.37%) and Hypertensive nephropathy (14.82%) were the other common causes of CKD in this study. Chaudhari et al.^[12] found diabetic nephropathy (32.0%), hypertensive nephropathy (20.0%) and chronic glomerulonephritis (10.0%) were the most common etiology of CKD.

Sathyan et al.^[13] found CGN (51.0%) and diabetic nephropathy (22.0%) as the most common etiologies of CKD. Jha et al., [14] in their study found that diabetic nephropathy (31.2%) and hypertensive nephropathy (12.8%) were the most common etiologies of CKD. The study of Parsi et al. (2015) revealed that diabetes (40.0%) and hypertension (32.0%) were the most common etiological agent for CKD.

In our study, Anorexia was the most common symptom (66.60%) followed by Oliguria (62.96%), dyspnea (42.6%), pruritus in 38.5%. Dyspnea (75.68%), and oliguria (69%) were the chief presenting complaints observed in the study of Sathyan et al.^[13]

The pedal edema developed in 92 patients (85.18%) of CKD. Pallor developed in 89 patients (82.41%) out of 108 patients of CKD. Pleural effusion (33.33%), Ascites (29.63%), pulmonary edema (22.22%), pericardial effusion (9.36%) and peripheral Neuropathy developed in (5.56%) of patients.

Chaudhari et al.^[12] found that most common system wise manifestations were fluid overload (82.0%), cardiovascular system (76.0%), Musculoskeletal System (74.0%), Gastrointestinal System (70.0%), Respiratory System (32.0%) and Nervous System (22.0%). Li et al.^[15] in their study found gastrointestinal system involvement in 81.5% patients.

About 35% of CKD patients had hemoglobin with less than 5 gm/dl, about 44.44% of CKD patients had Hb between 5-10 gm/do. Only 22.37% of CKD patients had Hb more than 10gm/dl. The Hemoglobin levels were below 10 gm/dl in 96.0% of the patients.^[12] Another study found that up to 90.0% of ESRD patients had hemoglobin less than 10 gm/dl. McGonigle et al.^[16]

The mean hemoglobin in the study of Sathyan et al.^[13] was 8.42 g/dl. Anemia was present in 90.3% cases and 25.53% cases had hemoglobin less than 7g/dl. Anaemia was present in all patients where mean hemoglobin level was 7.52 +1.20 mg/dl.^[17]

CONCLUSION

The incidence of CKD is a major health hazard in our country. The present study aims to spotlight the growing incidence of CKD among the population. The major symptoms were anorexia, Oliguria, Genralized weakness and dyspnea the major signs were pedal edema, pallor and pleural effusion. So if any patient present with these features, they need to be evaluated thoroughly to detect renal disease as early as possible.

The major causes of CKD found in the present study were, Diabetic Nephropathy, chronic glomerulonephritis, and hypertension. So if we detect and treat these conditions early, we can prevent further progression and irreversible damage to the kidney. Early detection and correction electrolyte imbalances needed to prevent mortality. It is important to implement appropriate screening programmes to aid early detection of CKD in at risk populations.

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How to cite this article: Uddin MJ, Mehdi MD, Singh R, Singh P, Sandhu AS, Kumar KPVY. Clinical and Etiological Profile of Chronic Kidney Disease in a Tertiary Care Hospital in Seemanchal Region of Bihar. *Ann. Int. Med. Den. Res.* 2021; 7(1):ME09-ME12.

Source of Support: Nil, **Conflict of Interest:** None declared