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"BURDEN OF CHRONIC KIDNEY DISEASE ITS CAUSAL ASSOCIATION AND COMPLICATIONS AMONG PATIENTS COMING TO TERTIARY REFERAL CARE CENTRE – A RETROSPECTIVE CLINICAL STUDY"

General Medicine

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ABSTRACT

Background: Chronic kidney disease is predominant, irreversible, progressive, and associated with higher cardiovascular risk. Patients with this pathology remain asymptomatic most of the time, presenting the complications typical of renal dysfunction only in more advanced stages. Its treatment can be conservative (patients without indication for dialysis, usually those with glomerular filtration rate above 15 ml/minute) or replacement therapy (hemodialysis, peritoneal dialysis, and kidney transplantation). The objectives of the conservative treatment for chronic kidney disease are to slow down the progression of kidney dysfunction, treat complications (anaemia, bone diseases, cardiovascular diseases), vaccination for hepatitis B, and preparation for kidney replacement therapy. **Objective:** Burden of chronic kidney disease its causal association and complications among patients coming to tertiary referral care centre – a retrospective clinical study. **Method:** This retrospective clinical study involves 231 clinically and haematological proven cases of Chronic Kidney Disease (CKD) registered in department of General Medicine CIMS, Bilaspur conducted during 1march 2023 to 1 march 2024. **Result:** Most of the patients were in the age group of 51-60 yrs, and least patients were from age below 20yrs. More than 70% patients' belonged to rural area and only 28% were urban, 73.6% patients were male and 26.4% were female. Hypertension appeared to be the major cause of CKD followed by diabetes mellitus in our study group patients; hepatitis B & C were also associated with CKD. Congestive cardiac failure was the major complication observed associated with CKD i.e.17.2%, followed by severe anaemia 4.1%, hypothyroidism 1.7% and lastly seizure disorder and coronary artery disease 0.6% each. Congestive cardiac failure was the most common complication noted associated with death 6.9%, followed by severe anaemia among 6.5%. **Conclusion:** CKD was most commonly found in the age group of 51-60 yrs it was predominant among males who belonged to rural regions than females and males from urban region, Hypertension appeared to be the major cause of CKD followed by diabetes mellitus in our study group patients, Congestive cardiac failure was the major complication observed associated with CKD.

KEYWORDS

Chronic Kidney Disease (CKD), causal association, Congestive cardiac failure.

INTRODUCTION

Chronic kidney disease (CKD) is characterized by the presence of kidney damage or an estimated glomerular filtration rate (eGFR) of less than 60 mL/min/1.73 m², persisting for 3 months or more, irrespective of the cause.[1] Worldwide, CKD accounted for 2,968,600 (1%) of disability-adjusted life-years and 2,546,700 (1%-3%) life-years lost in 2012.[2] The causes of CKD vary globally, with the most common primary diseases leading to CKD and, ultimately, end-stage renal disease (ESRD) beingType 2 diabetes (30%-50%) Type1diabetes (3.9%) Hypertension (27.2%) Primary glomerulonephritis (8.2%) Chronic tubulointerstitial nephritis (3.6%) Hereditary or cystic diseases (3.1%) [2] CKD may result from disease processes in any of the 3 categories, including prerenal (decreased renal perfusion pressure), intrinsic renal (pathology of the vessels, glomeruli, or tubules-interstitium), or postrenal (obstructive). Clinical risk factors for the accelerated progression of CKD include proteinuria, hypertension, Black race, and hyperglycemia. Environmental exposures, such as lead, smoking, metabolic syndrome, certain analgesic agents, and obesity, have also been linked to the accelerated progression of CKD.[3] Many other compounds are also being examined for use as markers of acute kidney disease and CKD, including cystatin C, kidney injury molecule 1 (KIM-1), soluble urokinase-type plasminogen activator receptor, urinary epithelial growth factor, beta-2 microglobulin, retinol-binding protein, serum neutrophil gelatinase-associated lipocalin (NGAL), L-type fatty acid-binding protein (L-FABP), fibroblast growth factor 23 (FGF23), and beta-trace protein.[4] The most commonly used urine dipstick protein segment measures albumin only because albuminuria is often increased out of proportion to other urine proteins in common proteinuric diseases, but this may not quantify other elevated urine protein levels such as Bence Jones proteins.[5][6]

Potentially reversible causes of AKI, such as infection, drugs, hypotension, and hypovolemia, should be identified and addressed. Patients with CKD should be carefully evaluated before undergoing intravenous contrast studies, and alternatives should be considered first. Additionally, nephrotoxic agents, including aminoglycoside antibiotics and nonsteroidal anti-inflammatory drugs (NSAIDs), should be avoided. Bicarbonate supplementation for treating chronic metabolic acidosis has been demonstrated to delay CKD progression.[7] Additionally, intensive glucose control in individuals with diabetes has been effective in delaying the onset of albuminuria and preventing the progression from albuminuria to overt proteinuria.[8] Measures of kidney function and occurrence of new and worsening CVD were primary endpoints, and they have yielded valuable data on a variety of other significant associations.[9]

Objective: Burden of chronic kidney disease, its causal association and complications among patients coming to tertiary referral care centre – A retrospective clinical study.

MATERIALS AND METHODS

This retrospective clinical study involves 231 clinically and haematological proven cases of Chronic Kidney Disease (CKD) registered in department of General Medicine CIMS, Bilaspur conducted during 1march 2023 to 1 march 2024.

Patient Inclusion Criteria

- Clinically and haematological and Radiological proven cases of chronic kidney disease (CKD).
- All age group patients.
- All performance status patients.

RESULTS

Age

Most of the patients were in the age group of 51-60 yrs, and least patients were from age below 20yrs, it shows that the older patients were suffered dominantly from CKD than younger patients.

Table 1 Age Interval wise Distribution of Patients

Age (yrs)	Frequency N = 231	%
<20	3	1.29
20 - 30	21	9.09
31 – 40	51	22
41 - 50	54	23.37

51 – 60	71	30.74
61 – 70	24	10.4
>70 yrs	7	3.03

Population

More than 70% patients belonged to rural area and only 28% were urban depicting that rural population is more prone and susceptible for CKD.

Table 2 Population wise Distribution of Patients.

Population	frequency	%
Rural	166	71.86
urban	65	28.13

Gender

73.6% patients were male and 26.4% were female.CKD is predominant among males than in females in our study group.

Table 3 Gender wise Distribution of Patients

Gender	Frequency	(%)
Female	61	26.4
Male	170	73.6
Total	168	100

Causal Association

Hypertension appeared to be the major cause of CKD i.e. 37.6% followed by diabetes mellitus 17.3% in our study group patients; hepatitis B & C were also associated with CKD.

Table 4 Causal association with CKD:

cause	frequency	%
HTN	87	37.66
DM	40	17.31
Hepatitis B	2	0.86
CKD	1	0.43
Hepatitis c	1	0.43
Carcinoma prostate	2	0.86
HIV	1	0.43

Complications Associated with CKD:

Congestive cardiac failure was the major complication observed associated with CKD i.e.17.2%, followed by severe anaemia 4.1%, hypothyroidism 1.7% and lastly seizure disorder and coronary artery disease 0.6% each.

Table 5 complications Associated with CKD

Age	Frequency	%
CCF	36	17.2
CAD	3	0.6
Severe anaemia	60	4.1
Seizure disorder	8	0.6
hypothyroidism	2	1.7

CCF=congestive cardiac failure, CAD=coronary artery disease

Complications Leading to Death:

Congestive cardiac failure was the most common complication noted associated with death 6.9%, followed by severe anaemia among 6.5%.

Table 6: Cause of death in chronic kidney disease.

cause	Frequency	%
CCF	16	6.9
Severe anaemia	15	6.5
CVA	10	4.3
Sepsis	8	3.5
Acute kidney injury	4	1.7
CAD	2	0.86
Hyperkalemia	1	0.43

CCF=congestive cardiac failure, CVA= Cerebrovascular accident, CAD=coronary artery disease

DISCUSSION

This retrospective clinical study involves 231 clinically and haematological proven cases of Chronic Kidney Disease (CKD) registered in department of General Medicine CIMS, Bilaspur conducted during 1march 2023 to 1 march 2024. In our study Most of the patients were in the age group of 51-60 yrs, and least patients were from age below 20yrs, it shows that the older patients were suffered dominantly from CKD than younger patients. Similar results were seen in study of **Coresh J, Astor BC, Greene T et al** The prevalence in the US elderly was much higher at about 39.4% of persons aged 60+ years have been noted to have CKD versus 12.6 and 8.5% of persons aged 40–59 years and 20–39 years, respectively [10]. Hypertension appeared to be the major cause of CKD i.e. 37.6% followed by diabetes mellitus 17.3% in our study group patients, finding resembles the data from study by **Harnett JD, Foley RN, Kent GM et al** in which they found that over the course of dialysis 76 subjects (25%) who did not have baseline CHF subsequently developed CHF. The median survival of subjects with CHF at baseline was 36 months compared with 62 months in subjects without CHF [11]. The elderly with CKD had more CVD burden than the non-CKD population in the USRDS 2013 annual data report. CHF was noted in 43% of CKD patients, compared with just 18.5% in the non-CKD patients. Microvascular disease resulting from diabetes can cause CKD in about 40–50% of patients with diabetes, a process called diabetic nephropathy. In one large population study by **Wild S, Roglic G, Green A et al** the authors estimated the prevalence of diabetes for all age-groups worldwide to be 2.8% in the year 2000 and this is projected to increase to 4.4% by the year 2030. [12]. Our study depicted that Congestive cardiac failure was the most common complication noted associated with death 6.9%, followed by severe anaemia among 6.5% whereas The Rotterdam study by **Brugts JJ, Knetsch AM, Mattace-Raso FU et al** The study showed that a 10 $ml.min^{-1}/1.73\ m^2$ decrease in glomerular filtration rate was associated with a 32% increased risk of myocardial infarction ($p < 0.001$), and that renal function is a graded and independent predictor of the development of myocardial infarction in an elderly population [13].

CONCLUSION

In our research CKD was most commonly found in the age group of 51-60 yrs it was predominant among males who belonged to rural regions than females and males from urban region, Hypertension appeared to be the major cause of CKD followed by diabetes mellitus in our study group patients, Congestive cardiac failure was the major complication observed associated with CKD. All high-risk patients, including those with diabetes or hypertension, should be screened for CKD and also receive counselling on the symptoms and signs of the condition.

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