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ORIGINAL RESEARCH

Assessment of prescribing patterns of medicines in chronic kidney disease patients

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ABSTRACT

Background: Chronic kidney disease (CKD) is characterized by progressive decline in glomerular filtration rate (GFR). The present study was conducted to assess prescribing patterns of medicines in chronic kidney disease (CKD) patients.

Materials & Methods: 78 patients of CKD of both genders were assessed for clinical profile, drug usage patterns, and medication-related problem. Suspected adverse drug reactions (ADRs) were recorded.

Results: Out of 78 patients, males were 30 and females were 48. Cardiovascular drugs used by patients was diuretics in 24, ACE inhibitors in 10, calcium channel blocker in 8, beta blockerin 6, gastrointestinal drugs such as H2 blockers in 12, proton pump inhibitor in 4, Hematopoietics such as iron in 2, folate in 3 and erythropoietinin 4, antibiotics such as cefoperazone in 2, levofloxacin in 1 and ceftriaxone in 2 patients. The difference was significant (P<0.05). Adverse drug reactions observed were hyponatremia in 25%, hypokalaemia in 14% and hypoglycaemia in 8% patients. The difference was significant (P< 0.05).

Conclusion: Common administered drugs in patients with chronic kidney disease was cardiovascular drugs followed by gastrointestinal drugs, hematopoietics and antibiotics. Common adverse drug reactions observed were hyponatremia, hypokalaemia and hypoglycaemia.

Key words: chronic kidney disease, gastrointestinal drugs,hyponatremia

INTRODUCTION

Chronic kidney disease (CKD) is characterized by progressive decline in glomerular filtration rate (GFR). It has high morbidity and mortality. It is considered as is a major public health issue all over the world. It affects large diabetic and hypertensive population worldwide.[1] The therapy of CKD and end-stage renal disease (ESRD) is very expensive and more than 90% of patients in India don't afford it.[2]

CKD patients requiring frequent hemodialysis have multiple complications. Most of the patients are on huge pharmacologic therapy and patients with end stage renal disease (ESRD)poses high risk of unfavorable drug effects. The reason for drug-related problems in CKD patients may attribute to the use of multiple medications along with poor compliance with drug regimens.[3]

The selection of appropriate drug therapy for patients with CKD is important to prevent unwanted drug effects and to ensure optimal patient outcomes. CKD patients are dependent on complex therapeutic regimens, hence rational drug prescription is difficult.[4]The presence of other comorbidities such as diabetes mellitus, hypertension, coronary artery disease, and infections make the situation more complicated.[5] Inappropriate medication use can increase adverse drug effects as reflected in prolonged hospital stays, increased health care utilization and costs.[6]The present study was conducted to assess prescribing patterns of medicines in chronic kidney disease (CKD) patients.

MATERIALS & METHODS

The present study comprised of 78 patients of CKD of both genders. All gave their written consent for the participation in the study.

Data such as name, age, gender etc. was recorded. Clinical profile, drug usage patterns, and medication-related problem were recorded in case history proforma. Suspected adverse drug reactions (ADRs) were recorded in the format recommended by the Pharmacovigilance Programme of India. Adherence level was assessed by Morisky Medication-Taking Adherence Scale 4-item scale. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 78		
Gender	**Males**	**Females**
Number	30	48

Table I shows that out of 78 patients, males were 30 and females were 48.

Table II Assessment of drug usage pattern

Drugs	Variables	Number	P value
Cardiovascular drugs	Diuretics	24	0.01
	ACE inhibitors	10	
	Calcium channel blocker	8	
	Beta blocker	6	
Gastrointestinal drugs	H2 blockers	12	0.02
	Proton pump inhibitor	4	
Hematopoietics	Iron	2	0.81
	Folate	3	
	Erythropoietin	4	
Antibiotics	Cefoperazone	2	0.91
	Levofloxacin	1	
	Ceftrioxone	2	

Table II, graph I shows that cardiovascular drugs used by patients was diuretics in 24, ACE inhibitors in 10, calcium channel blocker in 8, beta blocker in 6, gastrointestinal drugs such as H2 blockers in 12, proton pump inhibitor in 4, Hematopoietics such as iron in 2, folate in 3 and erythropoietin in 4, antibiotics such as cefoperazone in 2, levofloxacin in 1 and ceftriaxone in 2 patients. The difference was significant (P< 0.05).

Graph I Assessment of drug usage pattern

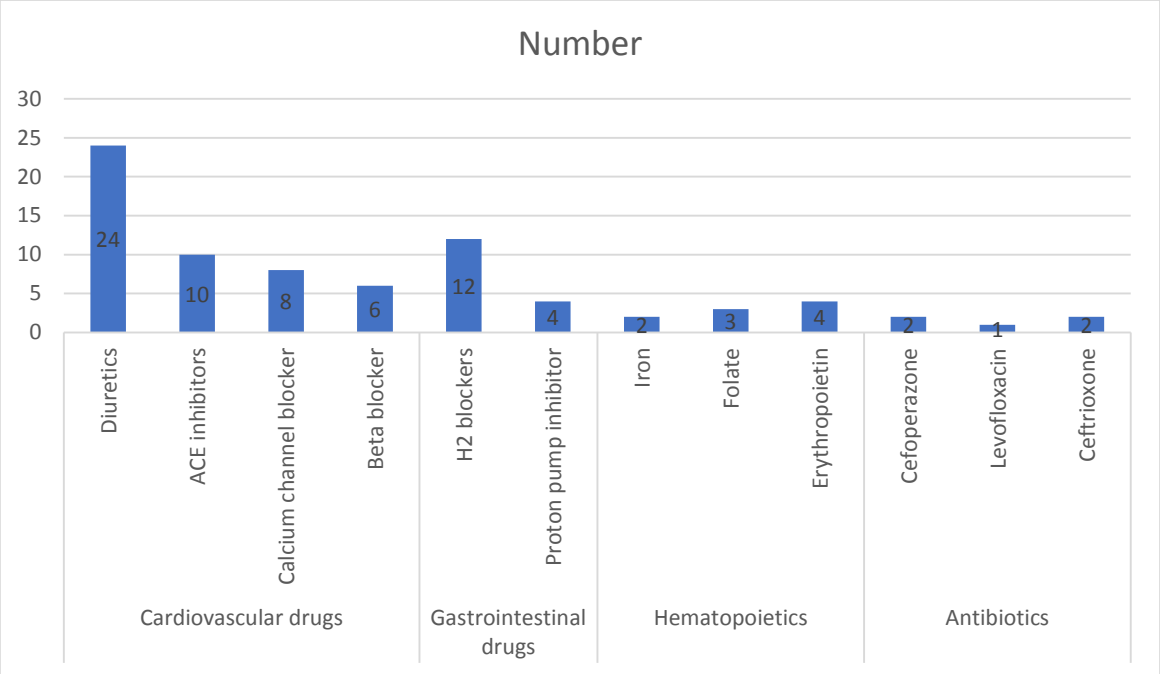

Table III Adverse drug reactions

ADR	Percentage	P value
Hyponatremia	25%	0.04
Hypokalaemia	14%	
Hypoglycaemia	8%	

Table III shows that adverse drug reactions observed were hyponatremia in 25%, hypokalaemia in 14% and hypoglycaemia in 8% patients. The difference was significant (P< 0.05).

DISCUSSION

Noncompliance with drug regimens may increase the risk of severe complications and represents a potential problem in hemodialysis patients who are on multiple medicines.[7]The management of diabetic nephropathy includes good glycemic control, tight control of blood pressure, and reduction of proteinuria, along with cessation of smoking, lipid control, and salt and protein restriction.[8]Therapeutic intervention is intended to prevent or retard the progression of the diabetic renal disease as well as to reduce cardiovascular complications.[9]The present study was conducted to assess prescribing patterns of medicines in chronic kidney disease (CKD) patients.

We found that out of 78 patients, males were 30 and females were 48. Chakraborty et al[10]assessed 100 CKD patients. 57% were male. The mean urea level was 160.11 mg/dL, mean creatinine level was 8.73 mg/dL. 46% were suffering from diabetic nephropathy. The common comorbidities were anemia seen in 89% followed by hypertension in 85%. The median number of drugs per prescription was 10 with the bulk being cardiovascular drugs in 23.41% followed by gastrointestinal drugs in 15.76% and vitamins in 12.29%. The median number of potential drug-drug interaction per prescription was 2. The incidence of adverse drug reactions (ADRs) was 46% with hyponatremia being most common in 32%followed by hypoglycemiain 16%and hypokalemiain 10%. Adherence level was low in the majority in 64% of patients.

We found that cardiovascular drugs used by patients was diuretics in 24, ACE inhibitors in 10, calcium channel blocker in 8, beta blockerin 6, gastrointestinal drugs such as H2 blockers

in 12, proton pump inhibitor in 4, hematopoietics such as iron in 2, folate in 3 and erythropoietinin 4, antibiotics such as cefoperazone in 2, levofloxacin in 1 and ceftriaxone in 2 patients. Mamadi et al[11]recruited 305 patients with the mean age 52.98 years, 73.1% were male and 55.4% patients were from a lower-middle socioeconomic status. About 72.1% were in CKD stage 5 and 37.0% had diabetic nephropathy. Antihypertensives (84.6%) were the most common drug class prescribed, followed by multivitamins (65.2%), proton-pump inhibitors (64.9%), and antidiabetic drugs (32.5%). There was no significant difference in rates of drug use over 6 months. Increased serum creatinine and lower estimated glomerular filtration rate (eGFR) predicted progression of CKD, and antiplatelets reduced progression.
We found that adverse drug reactions observed were hyponatremia in 25%, hypokalaemia in 14% and hypoglycaemia in 8% patients. Palmer et al[12] showed that antiplatelet therapy among CKD patients, reduced the risk of myocardial infarction by 13% and on the contrary, increased the risk of major and minor bleeding.Cukor et al[13] suggested that 39% were perfectly adherent, followed by 25% nearly perfect and 37% less than perfect adherence by medication therapy adherence scale.
The limitation the study is small sample size.

CONCLUSION

Authors found that common administered drugs in patients with chronic kidney disease was cardiovascular drugs followed by gastrointestinal drugs, hematopoietics and antibiotics. Common adverse drug reactions observed were hyponatremia, hypokalaemia and hypoglycaemia.

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