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A CROSS SECTIONAL STUDY OF RISK OF HYPERTENSION IN CHRONIC KIDNEY DISEASE PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract

Introduction: Hypertension is a global pandemic and is responsible for 24% of the coronary heart disease-related deaths and 57% of all the stroke related deaths in India.1 According to a recent report it is indicated that nearly one billion adults had hypertension in 2000, and this is predicted to increase to 1.56 billion by 2025. The present study is undertaken to understand the role of hypertension and its management in CKD patients admitted in the nephrology department of Govt General Hospital, Guntur Medical College, Guntur, AP**.**

Materials and methods: The chronic kidney disease patients admitted in the Nephrology ward from March 2021 to February 2022 were included in the study and were interviewed with a Pre-designed semi structured questionnaire. Three readings of blood pressure were obtained in the sitting position after at least 5 minutes of quite rest. A subject was considered hypertensive if one had systolic blood pressure (SBP) of ≥ 140 mmHg or diastolic blood pressure (DBP) of ≥ 90 mmHg (the average of two measures that were taken in the seated position) , or if he or she was using antihypertensive medication. The diagnosis and classification of HTN was done according to the JNC-VII report on Hypertension.

Results: Total study subjects were 306 in number. Their age ranged from 13 to 75 yrs and the Mean age was 47.96±11.14 years. Hypertension was present in 252(82.35%) of the patients with CKD. Age had a significant association with the presence of hypertension ($p<0.05$) whereas gender, education, economic status had no difference. 90.48% of the hypertensive patients were in stage 4 CKD when compared to 74.07% of the patients with normal blood pressure which was statistically significant ($p<0.05$). Of all the patients with hypertension 138(54.7%) were having hypertension before the diagnosis of CKD, 80(31.75) were simultaneously diagnosed along with CKD and 13.49% of the patients developed hypertension after the diagnosis of CKD, Family history of CKD was reported by 23.02% of the hypertensive patients whereas none of the patients with normal blood pressure had family history of Chronic Kidney Disease ($p<0.05$).

Conclusion: This study revealed prevalence of hypertension among CKD patients to be 82.35%. Increasing age (>40 yrs.) had a significant association with hypertension among CKD patients. Individuals with hypertension and family history of CKD had increased risk of developing CKD. Smoking and Alcohol consumption had a significant association with hypertension among CKD

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patients. Presence of hypertension had an increased risk for heart disease among CKD patients. Inadequately controlled hypertension had significant association with occurrence of heart disease.

Key Words: Hypertension, chronic kidney disease, heart disease.

INTRODUCTION

Hypertension is a global pandemic and is responsible for 24% of the coronary heart disease-related deaths and 57% of all the stroke related deaths in India.1 According to a recent report it is indicated that nearly one billion adults had hypertension in 2000, and this is predicted to increase to 1.56 billion by 2025.[1]

Chronic kidney disease (CKD) is a modern day global epidemic and it is now recognized as a public health issue. In chronic kidney disease (CKD) there is progressive loss in kidney function over a period of months or years which leads to severe metabolic and nutritional derangements in body.[2]

Hypertension doubles the risk of cardiovascular diseases including Coronary Heart Disease (CHD), congestive heart failure, ischaemic and haemorrhagic stroke, renal failure and peripheral arterial disease.[3] So, proper control of BP in hypertensive patients is a must to prevent poor outcome in CKD patients. The utilisation pattern studies are components of prescription auditing in health sector that monitors prescribing practices and commends required modifications to achieve rational drug use.[4]

Studies have also shown that better blood pressure control slows progression of chronic kidney disease. Lowering blood pressure will reduce the risk of heart disease, which for most patients with chronic kidney disease, is more of an immediate threat than end stage renal disease. Alcohol and smoking are said to play key role in the management of hypertension and blood pressure can often be lowered without medication merely by reducing consumption of alcohol.[5] The present study is undertaken to understand the role of hypertension and its management in CKD patients admitted in the nephrology department of Govt General Hospital, Guntur Medical College, Guntur, AP**.**

MATERIALS AND METHODS

Study Design: Cross sectional descriptive study.

Study Period: March 2021 to February 2022.

Study Area: Department of Nephrology, Govt General Hospital, Guntur Medical College, Guntur, AP**.**

Study Subjects: The chronic kidney disease patients admitted in the Nephrology ward from March 2021 to February 2022 were included in the study and were interviewed with a Pre-

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designed semi structured questionnaire. Three readings of blood pressure were obtained in the sitting position after at least 5 minutes of quite rest. A subject was considered hypertensive if one had systolic blood pressure (SBP) of ≥ 140 mmHg or diastolic blood pressure (DBP) of ≥ 90 mmHg (the average of two measures that were taken in the seated position) , or if he or she was using antihypertensive medication. The diagnosis and classification of HTN was done according to the JNC-VII report on Hypertension.

Statistical Analysis: Chi-square test and percentages. Data analyzed by EPIINFO software version 7.

RESULTS

Total study subjects were 306 in number. Their age ranged from 13 to 75 yrs and the Mean age was 47.96±11.14 years. Hypertension was present in 252(82.35%) of the patients with CKD. Age had a significant association with the presence of hypertension ($p<0.05$) whereas gender, education, economic status had no difference. 90.48% of the hypertensive patients were in stage 4 CKD when compared to 74.07% of the patients with normal blood pressure which was statistically significant ($p<0.05$). Of all the patients with hypertension 138(54.7%) were having hypertension before the diagnosis of CKD, 80(31.75) were simultaneously diagnosed along with CKD and 13.49% of the patients developed hypertension after the diagnosis of CKD, Family history of CKD was reported by 23.02% of the hypertensive patients whereas none of the patients with normal blood pressure had family history of Chronic Kidney Disease ($p<0.05$).

Presence of Hypertension had an increased risk (15.87% vs. none, $P<0.05$) for Heart disease. Only 4.35% of the patients with blood pressure under control had heart disease when compared to 29.82% of the patients with inadequate control ($p<0.05$). Among 210 male CKD pts 88.24% of the smokers had hypertension compared to 70% of non-smokers which is statistically significant ($P<0.05$). Similarly alcoholics had increased risk (176. 89% vs. 140. 83%, $P<0.05$) compare to non-alcoholics for hypertension.

Socio demographic factors	Hypertension present	Hypertension Absent	P Value
Male	178 (85%)	32 (15%)	>0.05
Female	74 (77%)	22 (23%)	
Less than 40 years	34 (65%)	18 (34%)	<0.05
≥40 years	218 (86%)	36 (14%)	
<12y of education	216 (81%)	50 (19%)	>0.05
>12y of education	36 (90%)	4 (10%)	
BPL	228 (82%)	50 (18%)	>0.05
APL	24 (85%)	4 (15%)	

Table 1: Hypertension and socio-demographic distribution of the study subjects

	CKD stage 3	CKD stage 4	Total	P value
Hypertensives	24 (9.52%)	228 (90.48%)	252 (100%)	<0.05

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Normotensives	14 (24.93%)	40 (74.07%)	54 (100%)	
Total	38 (12.42%)	134 (87.58%)	306 (100%)	

Table 2: Hypertension Vs Stage of Chronic kidney Disease

Subjects	Family history of CKD		Total	P value
	Present	Absent		
Hypertensives	58 (23.02%)	194 (76.98%)	252 (100%)	<0.05
Normotensives	0 (0%)	52 (100%)	52 (100%)	
Total	58 (23.02%)	248 (81.05%)	306 (100%)	

Table 3: Hypertension and Family history of Chronic Kidney disease among CKD patients

Subjects	Heart disease		Total	P value
	Present	Absent		
Hypertensives	40 (15.87%)	212 (84.31%)	252 (100%)	<0.05
Normotensives	0 (0%)	52 (100%)	52 (100%)	
Total	40 (15.87%)	266 (86.93%)	306 (100%)	

Table 4: Hypertension vs Heart disease among Chronic kidney Disease patients

Hypertension	Heart disease		Total	P value
	Present	Absent		
Under control	6 (4.35%)	132 (95.65%)	138 (100%)	<0.05
Inadequate control	34 (29.82%)	80 (0.18%)	114 (100%)	
Total	40 (15.87%)	212 (84.13%)	252 (100%)	

Table 5: Control of Hypertension Vs Heart disease among CKD patients

DISCUSSION

This study revealed overall prevalence of hypertension among CKD patients admitted into the nephrology ward over a period of six months to be 82.35%, which corresponds to the figure of 80% noted by a study done by Dr. Ronald M, Goldin et al.[6] The prevalence of hypertension was progressively increasing with the severity of CKD; 9.52% of the hypertensive patients were in stage 3, and 90.48% in stage 4-5 CKD. Based on a national survey of representative sample of non-institutionalized adults in the USA, it is estimated that hypertension occurs in 23.3% of individuals without CKD, and 35.8% of stage 1, 48.1% of stage 2, 59.9% of stage 3, and 84.1% of stage 4-5 CKD patients.[7]

A study done by J. A. Whitworth et al showed that more than half the patients with CKD die from a cardiac or vascular event. In a study done by He J et al it was found that adults using healthy lifestyle changes were six times more likely to have controlled hypertension.[8] Study done by Coresh et al. 2003 in their NHANES III Cross-sectional Survey revealed that 51.4% of those with Hypertension on no medication and 64. 4% of those with Hypertension on medication had reduced GFR.[9]

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Segura et al. 2004 in their Observational cohort study looking at relationship between blood pressure and CKD observed that among patients with essential hypertension and normal renal function at baseline and a mean follow-up of 13.2 years, 14.6% developed renal insufficiency.[10]

CONCLUSION

This study revealed prevalence of hypertension among CKD patients to be 82.35%. Increasing age (>40 yrs.) had a significant association with hypertension among CKD patients. Individuals with hypertension and family history of CKD had increased risk of developing CKD. Smoking and Alcohol consumption had a significant association with hypertension among CKD patients. Presence of hypertension had an increased risk for heart disease among CKD patients. Inadequately controlled hypertension had significant association with occurrence of heart disease.

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