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Prevalence of renal complications among hypertensive patients

Research Article

Chithra M G[1*], Lakshmi Kantham T[2], Meena Kumari R[3]

1. P.G. Scholar, 2. Associate Professor, Department of Maruthuvam,
3. Director, Head of the Department, Department of Gunapadam,
National Institute of Siddha, Tambaram Sanatorium, Chennai 47, Tamil Nadu, India.

Abstract

Hypertension is a major public health problem due to its high prevalence all around the globe. If undetected and untreated it silently damages the heart, brain, kidney and eyes. This study deals about renal complications of hypertensive patients. Aim & Objective: To assess the prevalence of renal complications among hypertensive patients. Methodology: The hospital based cross sectional study was conducted at Ayothidoss Pandithar Hospital, National Institute of Siddha.100 hypertensive patients who belong to the age group of 18-70 years were included based on the inclusion criteria. The evaluation was based on the questionnaire. Results: By analysing the study reports, out of 100 hypertensive patients, 19% patients had renal complications based on their report of urine routine, serum creatinine, blood urea, and their signs and symptoms. Observation of increased serum creatinine in the population was 19% and important observation in my study was 19% of the patients had proteinuria. Conclusion: In this study, the prevalence of renal complications among the hypertensive patients were considerably low (19%). Male patients with higher age group, Non vegetarian diet, stressful life and those suffering from uncontrolled blood pressure developed renal complications.

Key Words: Cross sectional study, Prevalence, Renal complications, Hypertensive patients.

Introduction

Hypertension is defined as ranges of blood pressure which fall above the normal range. The normal systolic blood pressure is < 130 mmHg and normal diastolic blood pressure is < 85 mmHg(1).

Hypertension is one of the leading cause of kidney disease which affects almost one in seven people(2). Both the incidence and prevalence of renal disease are increasing in the united states and worldwide(3). Hypertension is also major contributor to cardio vascular disease, the major cause of morbidity and mortality in renal failure(3). Richard Bright was the first to recognise the association between hypertension and renal disease. Hypertension is the rule in patients with end stage renal failure (ESRF)(4).

High blood pressure can constrict and narrow the blood vessels, which eventually damages and weakens them throughout the body, including the kidneys(5).The kidneys are not involved in the development of hypertension, but they are also often damaged if the disease is not controlled.

Early kidney disease also has no outward signs and symptoms. However, elevated levels of serum creatinine and urea can indicate kidney damage. Proteinuria an excess of protein in the urine is also a sign of kidney disease(5). Microalbuminuria has been suggested as a potential marker of early kidney dysfunction. Therefore the purpose of this study is to assess the prevalence and associated factors of renal disease among hypertensive patients.

*** Corresponding Author:**
Chithra M G
P.G. Scholar,
Department of Maruthuvam,
National Institute of Siddha,
Chennai - 47. India.
Email Id: chithramanibsms@gmail.com

Materials and Methods

This study was carried out after obtaining IEC (Institutional Ethics Committee) approval NIS/IEC/ 2020/MP- 3 and registering in CTRI – (Clinical trial registry of India) – CTRI/2020/06/026067.

It was a hospital based cross sectional study in which 100 hypertensive patients reported at National Institute of Siddha were selected based on their inclusion and exclusion criteria.

Inclusion Criteria: The patients who have already diagnosed as hypertensive, Both male and female, Age between 18 to 70, Hypertension patients who are willing to participate in the study will be enrolled through informed consent.

Exclusion Criteria: Non hypertensive patients, Diabetes Mellitus, Known case of auto immune disorder, Known case of other endocrine disorder, Hypertensive patients who are not willing to participate in this study and sign in the consent form.

Informed consent was obtained from the study subjects after explaining about the purpose of the study

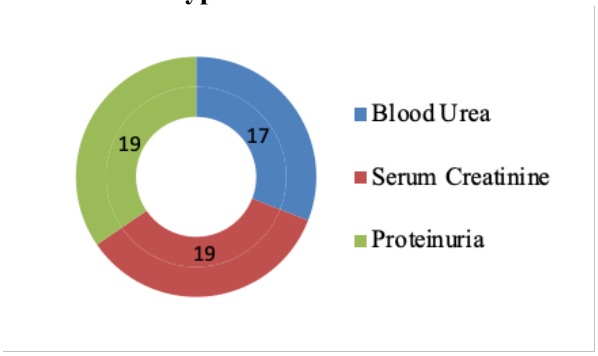
The selected patients were then interviewed with a pre designed questionnaire for hypertension with renal

complication (Clinical Research Protocols For Traditional Health Sciences (*Ayurvedha, Siddha, Unani, Sowa Rigpa* and others) CCRS-2010 Central Council For Research in *Ayurvedha* and *Siddha* Department of Ayush, Ministry of Health and Family Welfare Government of India, New Delhi. page no 713- 719) The questionnaire which covered their complaints and duration, signs of renal disease such as bipedal oedema, facial puffiness and pallor were checked. Personal history such as dietary habits and level of stress were asked by investigator. Physical examination such as BMI, blood pressure, heart rate, respiratory rate were checked and history of clinical lab investigations such as serum creatinine, blood urea, urine routine were checked by investigator.

The details of treatment history helped to analyse the type of drug taken and to check whether the patient was under regular or irregular medication. Renal function test, urine routine report helped to identified the renal involvement in hypertensive patients.

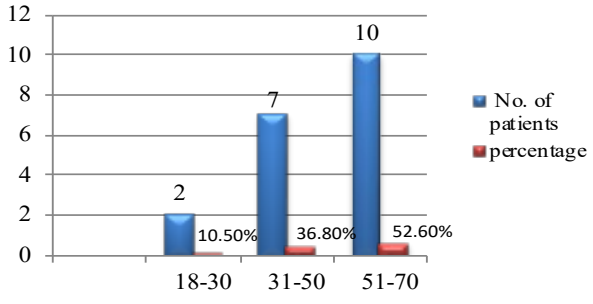
Observations and Results

Graph 1: Distribution of Blood urea, Serum creatinine level and Proteinuria Among 100 Hypertensive Patients



Inference: Among 100 hypertensive patients, 19 (19%) patients had increased serum creatinine level, 17 (17%) patients had increased blood urea level and 19 (19%) patients had proteinuria.

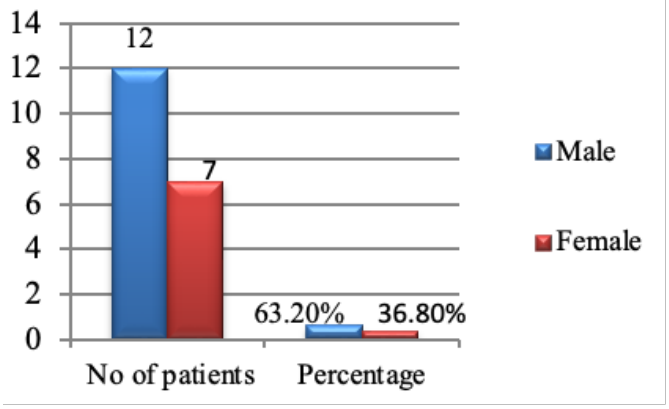
Graph 2: Distribution of Age group in Hypertensive Renal Disease patients



AGE

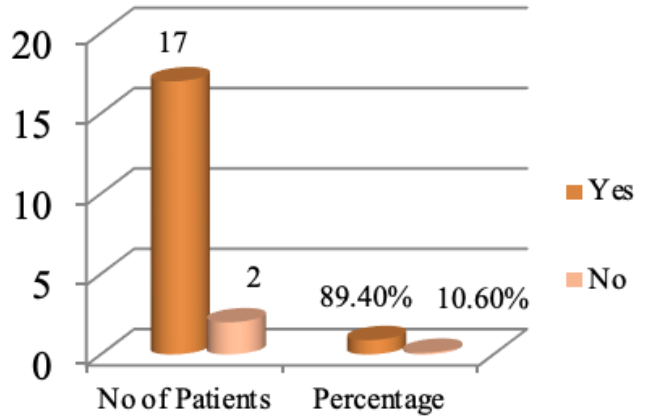
Inference: Among 19 hypertensive renal disease patients, 2 patients (10.50%) came under the age group between 18-30 years. 7 patients (36.80%) came under the age group between 31-50 years, 10 patients (52.60%) came under the age group between 51-70 years.

Graph 3: Distribution of Gender in Hypertensive Renal Disease patients



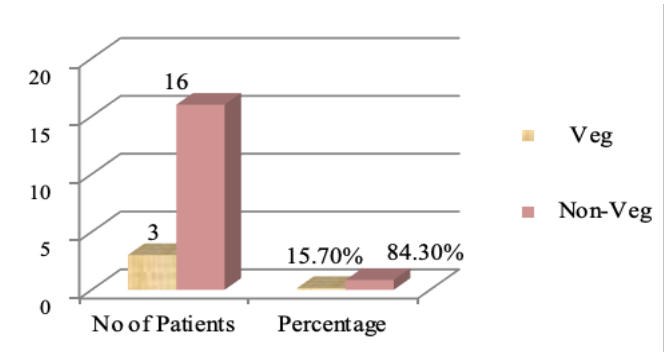
Inference: Among 19 hypertensive renal disease patients, 12 patients (63.20%) comprised male and 7 patients (36.80%) comprised female.

Graph 4: Stress Distribution in Hypertensive Renal Disease Patients



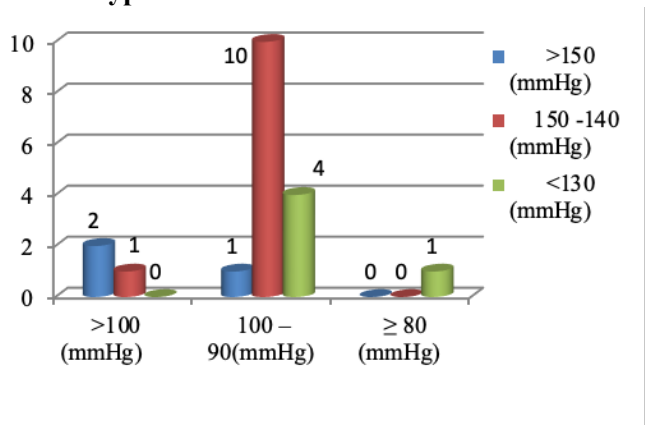
Inference: Among 19 hypertensive renal disease patients, 17 patients (89.40%) with stress and 2 patients (10.60%) were not with stressful life.

Graph 5: Diet Distribution in Hypertensive Renal Disease Patients



Inference: Among 19 hypertensive renal disease patients, 16 patients (84.30%) were consuming non vegetarian diet and 3 patients (15.70%) were consuming vegetarian diet.

Graph 6: Blood Pressure Distribution in Hypertensive Renal Disease Patients



Diastolic Blood Pressure

Inference: Among 19 hypertensive renal disease patients,10 patients (52.6 %) were presented with the range of 150–140 mmHg of systolic blood pressure and 100–90 mmHg of diastolic blood pressure.

Discussion

This study was aimed to assess the prevalence of renal disease among hypertensive patients. Out of 100 hypertensive patients, 19 patients with renal complications were identified by based on their clinical lab findings such as urine routine, serum creatinine, blood urea and their signs and symptoms.

Out of 19 renal disease patients, 52.6% of patient fell under the age group in between 51-70 years of age group. Renal disease participants comprises 63.2% males and 36.8 % females and 78.9 % patients had family history of hypertension. Factors such as age, gender, family history are highly influences the renal damage in hypertensive patients. Patients with renal disease were older people, more likely to be male were observed in epidemiology and risk factors of chronic kidney disease in India(9).

Age is the main clinical finding of large artery stiffness. Arterial stiffening with aging is accompanied by an elevation in systolic blood pressure. Women always have 5% to 10% lower stiffness than men of the same age(9).

Among 19 hypertensive renal disease patients, 52.6 % of patients were presented with the range of 140–150 mmHg of systolic blood pressure and 90–100 mmHg of diastolic blood pressure. The strongest evidence which supports my study high blood pressure may increases the risk of subsequent renal disease comes in the analysis of Hypertension Detection and Follow-up Program and the Medicare End Stage Renal Disease (ESRD) Program(8).

Based on the signs and symptoms of 19 renal disease patients, 10 patients had pallor sign, 16 patients had bipedal oedema, 13 patients had facial puffiness and 15 patients had decreased urine output. These are all signs and symptoms to indicate the renal damage in hypertensive patients.

84.3% of individuals were consuming Non vegetarian diet and 15.7 % of patients were consuming Vegetarian diet. 89.4 % of patients with stress and 10.6 % of individuals were not with stressful life. These findings were indicates that diet and stress level have more impact to renal disease in hypertensive patients.

Renal disease is associated with increase in oxidative stress markers. This oxidative stress can accelerate renal injury progression(10). High salt intake is associated with increased infiltration of lymphocytes and oxidative stress. This indicate that renal infiltrating T lymphocytes are capable of participating in the progression of hypertension and renal damage(11).

In the present study, the outcome of prevalence of renal disease among 100 Hypertensive patients was 19%. Because, Observation of increased serum creatinine level in the sample population was 19% and increased urea prevalence in the sample population was 17%.

An important observation in the present study was 19% of the patients had proteinuria. Among these 19 patients, 63.2% were males and 36.8% were females; 52.6% of patients were in the age above 50; 84.3%of patients were Non vegetarian diet. 89.4% of patients had stress and 52.6% of patients had the blood pressure above 140/90 mmHg. These all factors were associated to renal damage in hypertensive patients.

In the article of prevalence of chronic kidney disease among hypertensive patients in Ghana(6), the outcome of prevalence of CKD among patients with hypertension ranged from 13% - 51%.

According to Albuminuria, the prevalence of CKD ranged from 15% - 25%. The main finding from this study was that the renal complication was prevalent at 19% of the sample population of this study.

Moreover, the higher age, sex, uncontrolled hypertension, Non vegetarian diet, stress, were associated to it. From this study, It was found that approximately one in five patients were had an evidence of renal disease. The National Chronic Kidney disease fact sheet of 2017 showed that among hypertensive patients one from 5 patients have chronic kidney disease which is in line with this study(7).

Conclusion

In this study, the prevalence of renal complications among hypertensive patients were considerably low (19%). Advance age, sex, Uncontrolled hypertension, diet, stress were found to be associated factors of renal disease among hypertensive patients. In response to this finding, tailored future intervention that targets in prevalence & resolution of associated factors is required. The results of this study can be used to improve the quality of life in hypertensive patients through yogam, pranayamam, meditation, physical activities along with proper siddha medications at NIS OPD and to create awareness among them to regularise their life style routine. From this study, male patients with higher age group, Non vegetarian diet, stressful life, suffering from uncontrolled blood pressure were developed renal complications compared to others. In future, further elaborate study can be conducted in larger population for detailed and comprehensive analysis.

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