



AN OBSERVATIONAL STUDY OF TREATMENT OF HYPERTENSION AND ITS EFFECT ON PATIENTS IN A TERTIARY CARE CENTRE

Internal Medicine

Dr. Padmakar Sabnis

Department Internal Medicine, Senior Resident, Indian Institute of Medical Science & Research Aurangabad-Jalna Road, Warudi, Tq.Badnapur, Dist.Jalna.

Dr Darpan Pandharinath Jakkal

Associate Professor Medical Oncology, Govt Medical College and Cancer Hospital, Chhatrapati Sambhajanagar.(Aurangabad)

Dr Varsha Darpan Jakkal

Associate Professor, Dept of General Surgery, R K Dhamani Medical College, Shriramchandra Institute of Medical Sciences, Chhatrapati Sambhajanagar (Aurangabad).

Dr Swati Shivajrao Kagne*

Associate Professor, Department of Obstetrics and Gynaecology, Government Medical College, Alibag. *Corresponding Author

ABSTRACT

Introduction: High blood pressure is a major concern with increasing lifestyle stress. Managing hypertension is vital to reducing hypertension-related morbidity. This study aims to investigate treatment of hypertension and its effects on patients in a tertiary care setting in rural parts of maharashtra. **Methods:** A cross-sectional study was conducted among hypertensive patients treated at Department of internal Medicine, Indian Institute of Medical Science & Research, Jalna, Maharashtra, India, between june 2023 to May 2024. After reviewing indoor patients papers, hypertension treatment and blood pressure effects in the past 12 months the data was collected. Logistic regression analysis was used to identify factors associated with poor blood pressure control. **Results:** 350 patients were enrolled in the study. Mean age was 60 years. 55% of patients were females. 70% were obese and 30% had diabetes mellitus. The most frequently prescribed drugs were amlodipine (90%), telmisartan (80%), hydrochlorothiazide (60%), enalapril (50%) and atenolol (50%). 90.0% of the patients received combination antihypertensive therapy. Most of the patients were chronic hypertensives. 55% patients were strictly compliant to medication, 30% patients followed hypertensive diet. Only 15% patients followed regular exercise schedule. **Conclusion:** Need to evaluate the adequacy of antihypertensive drug therapy among these patients and to implement treatment adherence is emphasized. Identification and management of hypertension-related complications and/or comorbid conditions which may complicate hypertension treatment is necessary. Efforts are needed to improve adherence to diet, exercise and medications compliance.

KEYWORDS

Hypertension treatment, patients, tertiary care

INTRODUCTION

Hypertension is a prevalent condition in India with prevalence of 22.6%[1]. Hypertension accounts for 12.8% of worldwide premature deaths annually [2]. Hypertension treatment involves lifestyle changes and drug therapy with blood pressure lowering as the primary goal [3]. Stepwise initiation of drug therapy and gradual stepping up to combination multidrug therapy is recommended in management of hypertension. Patients with mild to moderate hypertension are given single drug antihypertensive treatment and treatment modification is done when blood pressure is uncontrolled[3, 4]. Reasons for inadequate control of hypertension are heterogeneous and include low adherence to anti-hypertension medication and lifestyle changes, low compliance with scheduled follow-up visits and suboptimal pharmacotherapy [5].

Methods

Study Design

We conducted a cross-sectional observational study among hypertensive patients treated at Department of internal Medicine, Indian Institute of Medical Science & Research, Jalna, Maharashtra, India, between june 2023 to May 2024.

Data Collection

Data was collected between june 2023 to May 2024 using a structured questionnaire designed specifically for this study. Standard demographic data was obtained for each patient; Standing height and weight were measured during the physical examination and were used to calculate the body mass index (BMI). Patients' medical records from indoor papers were reviewed to obtain past medical history and treatment of hypertension and co-morbid conditions. Patients were questioned to determine their compliance with diet and exercise schedule and antihypertensive drugs.

Data Analysis

The data were captured and analysed using SPSS for Windows. Internal validation was carried out to ensure data completeness. Results are summarised as count and percentages for qualitative

variables and mean ($\pm$ SD) for quantitative variables. Adjusted odds ratios (AOR) and 95% confidence intervals (95% CI) were calculated; the level of significance was set at $p < 0.05$.

Ethics

Ethical approval for the study was obtained from the Ethics Committee.

RESULTS

Consent was taken from all patients who participated in study. A total of 376 patients were enrolled; 26 patients were excluded due to missing indoor papers and 350 patients were included in the final analysis. 55% of the participants were female and the mean age ($\pm$ SD) was 60 ($\pm$ 3.5) years, [table 1]. 70% were obese and 30% had diabetes mellitus. The most frequently prescribed drugs were amlodipine, telmisartan, hydrochlorothiazide, enalapril and atenolol [table2]. 90.0% of the patients received combination antihypertensive therapy. Most of the patients were chronic hypertensives. 55% patients were strictly compliant to medication, 30% patients followed hypertensive diet. Only 15% patients followed regular exercise schedule. 35 patients (10%) presented with hypertensive crisis.

Table 1: Demographic And Clinical Characteristics Of The Study Participants

Gender	Frequency,%
Female	55%
Male	45%
Age groups, years	
15 to 39	2%
40 to 59	24%
60 to 69	40%
≥ 70	34%
BMI classification, kg/m ²	
Normal weight	10.2%
Overweight	70%
Obese	19.8%

Co-morbidities	
Diabetes Mellitus	30%
Chronic renal Failure	3%
Blood pressure measurements	
Controlled	57%
Uncontrolled	43%
Hypertensive crisis	10%

Table 2.

Hypertension Treatment	Frequency, %
No. of drugs	
1 drug	9.0%
2 drugs	64%
3 drugs	16%
≥ 4 drugs	11%
Antihypertensive drug regimen	
amlodipine	10%
amlodipine plus hydrochlorothiazide	14%
hydrochlorothiazide plus telmisartan	49%
hydrochlorothiazide + telmisartan + atenolol	7%
hydrochlorothiazide + telmisartan + amlodipine	9%
hydrochlorothiazide + enalapril + atenolol + amlodipine	6%
Other combinations	5%

DISCUSSION

In this study conducted among 376 adult hypertensive patients attending follow-up treatment in a tertiary care setting in rural parts of maharashtra, the study population was of advanced age (> 60 years) and overweight/obese. 43% of the study participants had adequately controlled blood pressure (<140/90 mmHg). The control rate for hypertension was even lower (18%) in patients with diabetes mellitus and heart failure. Hypertension is a major risk factor for cardiovascular diseases (CVD) including ischemic heart disease, stroke and renal failure [6]. In this study, we found a high proportion of patients with chronic uncontrolled high blood pressure and other CVD risk factors including age > 60 (74%), overweight and obesity (89.8%) and diabetes mellitus (30%). Need for early detection and treatment of CVD risk factors and/or target-organ damage is highly recommended. Hypertensive patients with higher medication compliance are more likely to attain blood pressure targets than non-compliant patients [7, 8]. In this study, the majority of the patients had long term uncontrolled hypertension. Inadequate therapy including suboptimal drug dose may account for inadequate treatment response in treated hypertensive patients [9, 10]. Evaluation of patients, to assess kidney function is also necessary to rule out secondary causes of hypertension.

Strict dietary control, increased exercise and weight loss lower blood pressure and may reduce the need for antihypertensive drugs in patients with well-controlled hypertension [11, 12]. The adoption of healthy lifestyle behaviours in hypertensive patients is affected by a number of demographic factors. Future research is needed to identify hindrance to lifestyle changes among hypertensive patients. Limitations of this study include, participation was limited to patients who had attended follow up hypertension treatment exclusively at Department of internal Medicine, Indian Institute of Medical Science & Research, Jalna, Maharashtra, India.

Significant number of patients had also taken hypertension treatment elsewhere in the previous 12 months. These patients were excluded as previous data was missing.

CONCLUSION

Majority of the study participants were receiving combination antihypertensive drug therapy. There was a high prevalence of chronic uncontrolled high blood pressure; older age (≥ 60 years) and the use of combination anti-hypertensive medications were associated with poor blood pressure control. Need to evaluate the adequacy of antihypertensive drug therapy among these patients and to implement treatment adherence is emphasized. Identification and management of hypertension -related complications and/or comorbid conditions which may complicate hypertension treatment is necessary. Future research should focus on developing patient directed interventions to improve adherence to medication and lifestyle changes. The authors declare no competing interests.

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