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Original Research Article

Prevalence and Clinical Presentation of Hypertensive Emergencies in a Rural Tertiary Care Centre

Vikas Deokar

MBBS, MD Medicine, Assistant Professor, Department of Medicine, Vims medical college, Dahanu, Palghar, Maharashtra, India

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Corresponding Author: Dr. Vikas Deokar
Conflict of interest: Nil

Abstract:

Background: A hypertensive emergency is characterized by rapid deterioration of target-organs and poses an immediate threat to life. These conditions were invariably fatal before the advent of antihypertensive drugs. The present study was undertaken to find out prevalence and clinical profile of patients with hypertensive emergencies in western region of rural Maharashtra.

Materials and Methodology: The present prospective observational study was conducted in Emergency ward in Rural hospital during June 2024 to May 2025. Patient more than 18 year having systolic blood pressure of 180 mm of Hg and above or diastolic blood pressure of 120 mm of Hg and above with evidence of end organ damage, either clinically or laboratory findings and those who give written informed consent to participate in the study were included as study population. Detailed assessment was done including history taking, clinical examination and laboratory investigations. Data was entered into MS Excel and analysed using SPSS v23.0.

Results: The prevalence of hypertensive emergencies was 2.1%. The mean age of the patients was 53.87 ±12.85 years. Males constituted the majority with 52 (55.91%) patients. The majority of patients had dyspnoea with 57 cases (61.29%).

Conclusion: Hypertensive emergencies, though relatively infrequent, highlighting the need for prompt recognition and early management to prevent serious morbidity and mortality.

Keywords: Hypertensive Emergencies, Prevalence, Rural.

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Introduction

Hypertension remains one of the most prevalent non-communicable diseases worldwide. [1] Hypertension affects approximately one billion individuals worldwide as per the observations made by the Joint national committee on prevention, detection, evaluation and treatment of high blood pressure (JNC VII). [2] Hypertension is a major contributor to cardiovascular morbidity and mortality in India and worldwide. In India, one out of every five has hypertension and 50% of people above 50 years have hypertension. [3]

Hypertension is directly responsible for 57% of all stroke (CVA) deaths and 24% of all coronary heart disease deaths in India. Epidemiological studies show that hypertension is present in 25% urban and 10% of rural subjects in India. It is estimated that there are up to 31.5 million have hypertension in rural population. [3]

Hypertension is the one of the most common conditions seen in primary care and leads to myocardial infarction, stroke (CVA), renal failure, and death if not detected early and treated appropriately. [4,5] Hypertensive emergency can be an end result of chronic hypertension, noncompliance to drugs new presentation of unrecognized essential hypertension. A hypertensive emergency is characterized by rapid deterioration of target-organs and poses an immediate threat to life. These conditions were invariably fatal before the advent of antihypertensive drugs. The commonest symptoms with which patients in hypertension related acute target organ damage present with focal neurological deficits, dyspnea, chest pain, headache, and loss of vision. [6]

This clinical study of hypertensive emergencies is done in order to recognize this condition as early as possible, so as to reduce burden associated with it in terms of morbidity and mortality of the society. Very few studies had been done in rural part, hence the present study was undertaken to find out prevalence and clinical profile of patients with hypertensive emergencies in western region of rural Maharashtra.

Materials and Methodology

The present prospective observational study was conducted in Emergency ward in Rural hospital during June 2024 to May 2025. All patient admitted with high blood pressure and features of acute target organ damage were enrolled in the study. Patient more than 18 year having systolic blood pressure of 180 mm of Hg and above or diastolic blood pressure of 120 mm of Hg and above with evidence of end organ damage, either clinically or laboratory findings and those who give written informed consent to participate in the study were included as study population. Patients with known cases of and associated co morbidities like diabetes mellitus, chronic renal failure, valvular heart diseases, pregnancy induced hypertension were excluded from the study. A total 93 such patients participated in the study.

All the study participants were interviewed with the help of pre-structured questionnaire. Detailed assessment was done including history taking, clinical examination and laboratory investigations. Informed written consent was obtained from all the participants of the study. Data was entered into MS Excel and analysed using SPSS v23.0. Results were expressed as mean and standard deviation. Data were tabulated presented as numbers and percentages.

Results

In the study, during study period of one year a total of 93 cases accounted 2.1% of all the to clinical emergencies received (n=4435)

Table 1: Distribution according to demographic profile among patients: (n=93)

Demographic profile		Number of patients	Percentage
Age group (Years)	≤40	03	03.23
	41-50	07	07.53
	51-60	18	19.35
	61-70	27	29.03
	>70	38	40.86
Gender	Male	52	55.91
	Female	41	44.09

Most patients belonged to the age groups of >70 years accounting for 38 (40.86%) cases. The mean age of the patients was 53.87 ±12.85 years. Males constituted the majority with 52 (55.91%) patients. (Table 1)

Table 2: Distribution according to signs and symptoms among patients:

Signs and symptoms	Number of patients (n=93)	Percentage
Dyspnoea	**57**	**61.29**
Headache	**48**	**51.61**
Neurological deficit	**27**	**29.03**
Chest pain	**26**	**27.96**
Loss of Vision	**11**	**11.83**
Vomiting	**13**	**13.98**
Giddiness	**17**	**18.28**
Oedema	**21**	**22.58**

The majority of patients had dyspnoea with 57 cases (61.29%), followed by headache (17.50%), neurological deficit (29.03%), and chest pain (27.96%). (Table 2)

Table 3: Distribution according to blood pressure profile among patients:

Blood Pressure	Systolic blood Pressure (Mean ±SD)	Diastolic blood pressure (Mean ±SD)
At admission	**193.21 ± 12.18**	**116.56 ± 7.78**
At 1 hour	**182.17 ± 10.21**	**103.12 ± 6.32**
At 24 hours	**162.29 ± 10.78**	**94.32 ± 6.43**

The blood pressure, at the time of admission exhibited a mean Systolic Blood Pressure (SBP) of 193.21 ±12.18 mmHg and a mean Diastolic Blood Pressure (DBP) of 116.56 ± 7.78 mm Hg. By the 24-hour mark, significant stabilization was observed. The mean SBP was recorded at 162.29 ± 10.78 mmHg, and the mean DBP was 94.32 ±6.43 mm Hg. (Table 3)

Discussion

Hypertensive emergencies constitute a serious spectrum of hypertension-related complications that demand urgent medical intervention due to the high

risk of irreversible target organ damage. The present hospital-based cross-sectional study assessed clinical presentations, laboratory parameters, and imaging findings among patients presenting with hypertensive emergencies in a rural tertiary care setting, thereby offering important insights into disease patterns in an underserved population.

During the one-year study period, a total of 93 cases were identified, representing 2.1% of all clinical emergencies (n = 4435). Comparable findings have been reported in previous studies. Singh et al. [7] documented a prevalence of 1.5% among emergency cases, while studies conducted in Brazil by Martin et al. [8] and in Solapur, India, by Dhadke et al. [9] reported incidences of 1.7% and 1.22%, respectively, indicating a similar burden across different settings.

In the present study, the highest proportion of patients belonged to the age group above 70 years, accounting for 40.86% of cases, with a mean age of 53.87 ± 12.85 years. A male predominance was observed, with 55.91% of the study population being male. Similar demographic trends were noted by Manoj Kumar et al., [10] where the majority of patients were between 50–70 years of age (55%), with a mean age of 59.04 years, and males constituted a larger proportion of cases. This age distribution is consistent with existing literature, suggesting that hypertensive emergencies are more common in older individuals, likely due to prolonged exposure to uncontrolled hypertension and age-related vascular changes. The predominance of males, also reported by Zampaglione et al. [11] and Salagre et al. [12] may be attributed to greater exposure to cardiovascular risk factors and comparatively poorer health-seeking behavior among men.

With respect to clinical presentation, dyspnoea was the most frequently reported symptom (61.29%), followed by neurological deficits (29.03%), chest pain (27.96%), and headache (17.50%). Similar observations were made by Manoj Kumar et al. [10] who reported dyspnoea as the most common symptom in hypertensive urgency, along with easy fatigability and giddiness. Previous studies by Vaughan and Delanty [13] as well as Martin et al. [8] have also identified acute left ventricular failure as a major clinical manifestation of hypertensive emergencies. Neurological symptoms such as hemiparesis, altered sensorium, and headache were also commonly observed, highlighting the susceptibility of cerebral circulation to sudden elevations in blood pressure.

The present study demonstrated a gradual and controlled reduction in blood pressure over 24 hours, with an approximate decline of 16% in systolic and 19% in diastolic blood pressure compared to baseline values. These findings are in accordance with current treatment recommendations, which emphasize a cautious reduction in blood pressure to avoid hypoperfusion-related complications, particularly affecting the brain and myocardium. The observed reduction in mean arterial pressure (MAP) by approximately 10–15% within the first hour is considered safe and appropriate. The sustained decline over the subsequent 24 hours reflects effective management despite the inherent challenges of rural healthcare settings.

Similar trends have been reported by Mahaboob et al. [14] who also documented a significant and progressive reduction in systolic and diastolic blood pressure during the initial 24 hours of hospitalization, indicating the effectiveness of standardized antihypertensive treatment protocols. Such controlled reduction is crucial in minimizing the risk of ischemic complications, especially in vital organs like the brain and kidneys. [15,16]

In addition to acute management, long-term control and prevention strategies are essential. Patient education and empowerment through the use of information technology, including mobile health applications and accessible educational tools, should be encouraged. Strengthening awareness regarding lifestyle modifications is equally important in preventing hypertensive crises. Although national policies and targets for non-communicable disease control are well established, their implementation remains suboptimal, contributing to the continued burden of disease. Achieving the goal of reducing cardiovascular mortality by 25% by the year 2025 requires a corresponding reduction in hypertension prevalence by 25% and a 50% improvement in secondary prevention strategies. Close monitoring and regular follow-up by healthcare providers are essential to ensure adherence to therapy and attainment of optimal blood pressure control.

Conclusion

The rising burden of hypertension necessitates improved strategies for its prevention and management, particularly with emphasis on emergency manifestations. The prognosis of hypertensive crises is largely influenced by the clinical presentation of patients at the time of admission to the emergency department.

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