



ORIGINAL RESEARCH PAPER

Surgery

OUTCOME OF HYPERTENSIVE EMERGENCIES

KEY WORDS:

Dr. Wasim Akram

PG 3rd Year, Department of General Medicine, PESIMSR, Kuppam, Chittoor District – Andhra Pradesh

Dr. Nagarajan. N

Professor, Department of General Medicine, PESIMSR, Kuppam, Chittoor District – Andhra Pradesh

ABSTRACT

Aims and objectives: To study the outcome of hypertensive emergencies in an tertiary care teaching hospital in rural area and to study the clinical presentation of hypertensive emergencies related to cardiovascular, neurological and renovascular system. **Methods:** Type of Study: Cross-sectional, observational study. **Duration of study:** 18 months (MARCH 2018 to AUGUST 2019) Sample size: 50 patients of hypertensive emergencies, Above 18years of age group patients with Hypertension in PES hospital, Kuppam. Inclusion criteria -1. All patients above 18 years of age. 2. Systolic blood pressure > 180 mmHg Diastolic blood pressure > 120 mmHg **Exclusion criteria-** 1 Patients less than 18 years of age, 2.Pregnant women, pre-eclampsia We classified as hypertensive emergencies all cases in which the increase in blood pressure was associated with one or more of the following types of acute or ongoing end-organ damage: hypertensive encephalopathy; stroke (cerebral infarction or intracerebral or subarachnoid hemorrhage, transient ischemic attack); acute pulmonary edema, left ventricular failure; acute myocardial infarction or unstable angina, progressive renal insufficiency features suggestive of retinopathy. All these conditions were diagnosed clinically or by appropriate diagnostic tests. **Conclusion:** The most common presenting complaint in patients was breathlessness seen in 17 patients (34%), followed by neurological deficit in 24 patients (48%). Twenty seven patients (54%) had complaints of headache, whereas 12 (24%) patients complained of chest pain on admission and other symptoms included vomiting, and giddiness. Maximum hypertensive emergency cases were belongs to 56-65 years age group (40%) and ≥66 years (34%).Most common system involved neurovascular system followed by cardiovascular system and renal system. Out of 50 patients , 12 patients was expired and 38 patients was discharged. The outcome of hospital patient mortality was 24 %.

INTRODUCTION

In india, it is estimated that there are up to 31.5 million have hypertension in rural population.⁶ One out of every five has hypertension and 50% of people above 50yrs have hypertension. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India.⁶ Epidemiological studies show that hypertension is present in 25% urban and 10% of rural subjects in India.⁷

Definition

The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VII) report in 2003 has classified blood pressure into normal, prehypertension, stage I and stage II levels.¹⁷

	SYSTOLIC BP	DIASTOLIC BP mm Hg
NORMAL	<120mmHg	<80mmHg
PREHYPERTENSION	120-139mmHg	80-89mmHg
STAGE I	140-159mmHg	90-99mmHg
STAGE II	>160mmHg	>100mmHg

Hypertensive crisis

Hypertensive crisis includes both hypertensive urgencies and emergencies. Distinguishing hypertensive emergencies from urgencies is very important in further management of the patient. Hypertension primarily affects the heart, brain, kidneys, and large arteries referred to as the "target organs."

Hypertensive urgency

Hypertensive urgency is a situation with the markedly elevated blood pressure but without severe symptoms or progressive target organ damage.²⁰These patients must be carefully evaluated and monitored for hypertension-induced heart and kidney damage and for the identifiable cause of hypertension. They should receive immediate combination oral anti hypertensive therapy and these conditions can be treated in outpatient settings without hospitalization.^{19,21}

Hypertensive emergency

Hypertensive emergency is defined as the association of extremely elevated blood pressure with physical or

laboratory findings that indicate acute or ongoing target organ damage.¹⁸ Patients with true hypertensive emergencies are to be treated as inpatients, preferably in intensive care units as suggested by the seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure.¹⁷

Uncontrolled High BP may lead to severe hypertensive crisis consisting of hypertensive urgencies without end-organ damage or Hypertensive emergencies with End Organ Damage.^{8,9} The incidence of conditions such as atherosclerosis, cerebral hemorrhagic stroke (CHS), left ventricular failure (LVF) or chronic kidney diseases (CKD) is correlated to the level of HBP. ^{8,9} The etiology and complications of High BP have been associated to many risk factors such as obesity, heredity, tobacco and alcohol.^{10, 11} In spite of advances in the diagnosis and monitoring of patients, It remains a complex disease ever difficult to manage particularly in tropical countries where it is often associated with other co-morbid illnesses like diabetes, malaria and infections.^{4,5}

According to guidelines of standards of care, the treatment of Hypertension is aimed at normalizing BP in order to prevent complications.^{12,13} The prevention by certain drugs and mortality criteria have been proven for BP thresholds of 160/95 mmHg levels or 140/80 mmHg in diabetics or after a stroke. ^{12, 13} In all cases, a series of pharmacologic active anti-hypertensive molecules are used separately or in combination of which thiazide diuretics (TZDs), beta blockers (BBs), angiotensin converting enzyme inhibitors (ACEIs) or Angiotensin receptor blockers (ARBs), and calcium channel blockers (CCBs). In developing countries, the treatment is often less standardized and depends on the background or qualification of the personnel in charge of care. Little is known about HE profile and management. This study has been undertaken to assess the profile of patients with HE episodes Prevalence The prevalence of hypertension is increased in India, from 5% to more than 30% from the 1960s to 2008.²⁶ It is approximated that around 1% of patients with hypertension develop a hypertensive crisis during their lifetime.²⁷ A

majority of hypertensive crisis cases are consequent of inadequate medical treatment.²⁸ Even though chronic hypertension is established recognized risk factor for cardiovascular, cerebrovascular and renal disease, acute elevations in blood pressure can lead to significant morbidity due to acute end-organ damage.²⁹

ETIOLOGICAL CLASSIFICATION OF HYPERTENSION

1. Essential hypertension –no single and reversible cause can be detected and seen in more than 95% of cases of hypertension.
2. Secondary hypertension-there is definable cause for hypertension and seen in less than 5% cases.

SOME CAUSES OF SECONDARY HYPERTENSION

Renal parenchymal disease--Acute and chronic Glomerulonephritis, Chronic nephritis, Polycystic disease, Diabetic nephropathy, Hydronephrosis, Neoplasms, Renovascular like Renal artery stenosis, Intrarenal vasculitis, Aortic coarctation, Endocrine disorders -Renin-producing tumors, Cushing syndrome, Primary aldosteronism, Pheochromocytoma, Acromegaly, Pregnancy induced hypertension, Sleep apnea, Exogenous hormones and drugs, Glucocorticosteroids, Mineralocorticoids, Sympat homimetics, Thiamine containing foods and monoamine oxidase inhibitors, Oral contraceptive pills, Nonsteroidal, anti inflammatory drugs, Cyclosporine, Excess alcohol use, Drug abuse (e.g., amphetamines, cocaine).

Modes of Presentations

A number of cardiovascular, pulmonary, and neurological symptoms are found to be associated with patients in hypertensive emergencies, due to the presence of acute ongoing target organ damage. Focal neurological deficits, dyspnoea, chest pain, headache, and loss of vision are considered as the most typical symptoms with which patients in hypertension-related acute target organ damage present.

Hypertensive emergencies like: Accelerated - malignant hypertension -Clinical characteristics of accelerated malignant hypertension include diastolic blood pressure equal to or more than 140 mm Hg — fundoscopic examination showing hemorrhages, exudates, and papilledema. The neurologic status may include headache, confusion, somnolence, stupor, and loss of vision. These patients can also present with focal deficits, seizures, or in a coma. Evaluation of renal status may indicate oliguria, and azotemia.³⁰

Effective antihypertensive therapy has improved the prognosis in patients with malignant hypertension. With current treatment 5 times, survival rates of greater than 70% are usual. Immediate deaths from acute renal failure, hemorrhagic stroke, and CCF have been dramatically reduced by antihypertensive therapy.²⁰

Cerebrovascular conditions like Hypertensive encephalopathy is thought to be due to cerebral edema resulting from a failure of cerebral blood flow auto regulation.³¹

Clinical characteristics of hypertensive encephalopathy include a mean arterial pressure of about 180 mmHg. The neurological examination might reveal a disoriented patient or with varying severity of altered sensorium, presence of focal neurological signs, generalized or focal seizures, retinopathy including papilloedema, asymmetric reflexes, and nystagmus. Hypertensive encephalopathy is a diagnosis of exclusion and requires that stroke, subarachnoid hemorrhage, mass lesions, seizure disorder, vasculitis, and encephalitis to be ruled out. The goal of the therapy is to reduce the mean arterial pressure gradually by no more than 20-25% or to a diastolic BP of 100 mmHg, whichever value is higher during the first hour.³⁰

Atherothrombotic brain infarction with severe hypertension. Intracerebral hemorrhage is more than twice as common as subarachnoid hemorrhage (SAH) and is much more likely to result in death or major disability than cerebral infarction or SAH Advancing age and hypertension are the most important risk factors for ICH 38,39Cardiac conditions in hypertensive emergencies include acute left ventricular failure, acute myocardial infarction and acute aortic dissection. Elevations in systemic vascular resistance increase myocardial oxygen demand increasing the left ventricular wall tension.

Renal hypertensive emergencies like leading to hypertensive emergencies commonly occur in acute glomerulonephritis and in renovascular hypertension secondary to unilateral or bilateral renal artery stenosis. Patients usually present with oliguria, azotemia, and uremia.

Hypertensive emergencies secondary to excess circulating catecholamines True hypertensive emergencies caused by an excess of catecholamine are rare but usually can be attributed to one of the three presentations:

Pheochromocytoma, monoamine oxidase inhibitor crises, and intoxication with cocaine or other drugs of abuse.⁴¹ Patients with Pheochromocytoma often present with typical symptoms of headache, hyperhidrosis, and severe hypertension Rebound hypertension can occur in hypertensive patients after sudden cessation of anti hypertensive drugs

AIMS AND OBJECTIVES

To describe the clinical profile and To access the outcome of hypertensive emergencies in patients attending PES Hospital.

MATERIAL AND METHODS

STUDY SITE: This study is conducted by Department of General Medicine, PES hospital, Kuppam.

STUDY DESIGN: A Cross-sectional and observational study.

SAMPLE SIZE WITH JUSTIFICATION: 50 Patients.

TIME FRAME TO ADRESS THE STUDY: 18 months (MARCH 2018 to AUGUST 2019).

STUDY POPULATION: Above 18 years of age group patients visiting O.P. patients with Hypetension in PES hospital, Kuppam.

Inclusion criteria: All patients above 18 years of age with hypertensive emergencies, satisfying the Ameraica Heart Association 2017 criteria (Systolic blood pressure > 180 mmHg & Diastolic blood pressure > 120 mm Hg, with target organ damage).

Exclusion criteria:

1. Patients less than 18 years of age,
2. Pregnant women, pre-eclampsia

Methodology: On admission, a detailed history was taken, and a complete clinical examination was done. Patients with an elevated systolic blood pressure of ≥ 180mmHg or diastolic blood pressure of ≥120mmHg, with a history suggestive of acute target organ damage or with laboratory evidence of target organ damage, were included in the study.

Sampling technique: Convenience sampling
Tools & techniques to be used: A detailed clinical examination & laboratory work up as listed below and repeated during follow up and at the time of discharge will be done.

1. BIOCHEMICAL ANALYSIS :

CBC, Blood sugars, Serum electrolytes, Blood urea /

Creatinine ,Urine routine and microscopy (for proteins / RBC's / pus cells),Lipid profile, and Cardiac Enzymes
 2. ECG
 3. IMAGING STUDIES : 2D Echo, Chest X-Ray,USG Abdomen & Pelvis,CT head plain/contrast ,MRI brain if needed

Diagnostic Criteria:

The diagnosis of hypertensive emergency will be established by the following

1. Systolic blood pressure ≥ 180 mmHg or diastolic blood pressure ≥ 120 mmHg.
2. Acute target organ damage.

Observations and Results

50 patients of hypertensive emergencies admitted during the study period were studied.

The most common presenting complaint in patients was headache 27 (54 %), giddiness 22 (44 %), vomiting 22 (44 %), dyspnea 15 (30 %) and chest pain 12 (24%).

Table -1: SYMPTOMS

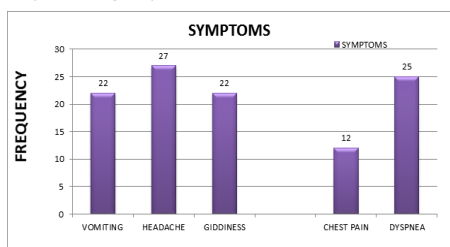
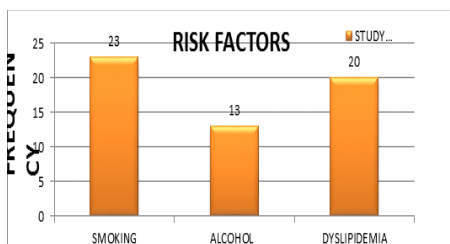
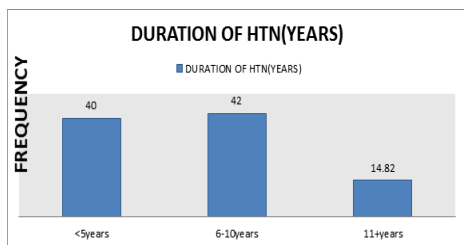


Table -2 :RISK FACTORS



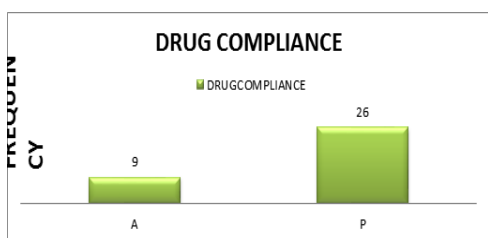
Major risk factor was smoking which is prevalent in 46% (23) followed by dyslipidemia (40.26%) and alcohol (27.27%).

TABLE-3 : DURATION OF HYPERTENSION IN YEARS



Out of 55 patients, 68 % of study population was known case of hypertension . Among HTN cases maximum cases (40 %) were suffering from <5years. 42.74% of HTN cases were diagnosed between 6-10 years.

TABLE - 4 :DRUG COMPLIANCE



Among HTN cases, drug compliance was seen only 74.29 %.

25.71% of HTN cases were not stick to HTN medication as per prescribed manner.

TABLE -5 :NEUROLOGICAL PICTURE

NEUROLOGICAL PICTURE	Frequency	Percentage
CONVULSIONS	3	6
RIGHT HEMIPARESIS	19	58
VISUAL DEFECIT	2	24
NO NEUROLOGICAL DEFICIT	26	26
TOTAL	50	100.0

Out of 50 patients the most commonest neurological deficit was hemiparesis (38%) and convulsions (3%)

Table 6: FUNDUS

FUNDUS EXAMINATIONS FINDINGS	Frequency	Percentage
GRADE I	9	18
GRADE II	13	26
GRADE III	5	10
PAPILLOEDEMA	20	40
NORMAL	3	6
TOTAL	50	100.0

On Fundus examination Out of 50 patients , 40.% were found with no abnormality. Grade I changes in 18.%, grade II 26 %,grade III 10.% and papilloedema was seen in 6% patients Cardiomegaly was seen in 30% (15) and pulmonary oedema in 8 % (4) seen on X-ray. Most common electrolyte imbalance was hyponatremia (20 %) followed by hypokalemia in 10 % and hyperkalemia (3 %)

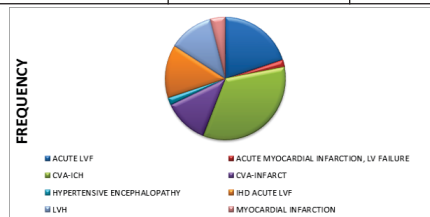
TABLE 7 : USG ABDOMEN RENAL PARENCHYMAL CHANGES

USG ABDOMEN	Frequency	Percentage
Grade I Changes	5	10
Grade II Changes	3	6
NAD	35	70
TOTAL	50	100.0

On ultrasound abdomen Renal parenchymal changes -grade I changes were found in 5 (10) and grade II changes were found in 6 % (3).

TABLE 8- DIAGNOSIS

	Frequency	Percentage
ACUTE LVF	10	20.78
ACUTE MYOCARDIAL INFARCTION, LV FAILURE	1	1.30
CVA-ICH	17	33.77
CVA-INFARCT	6	11.69
HYPERTENSIVE ENCEPHALOPATHY	1	1.30
IHD ACUTE LVF	7	12.99
LVH	6	10.39
MYOCARDIAL INFARCTION	2	7.79
TOTAL	50	100.0



GRAPH OF DIFFERENTIAL DIGNOSIS

Maximum proportion of patients were diagnosed with CVA-intra cranial bleed (17%) followed by acute left ventricular failure (10%), IHD-acute LVF (7%) and CVA-infarct (6%). Other diagnosis conditions were LVH (6%) and MI (2%).

TABLE -9 ORGANS INVOLVED

NO OF ORGANS INVOLVED	Frequency	Percentage
1	16	32
2	30	60
3	4	8
TOTAL	50	100.0

Out of 50 patients Majority of hypertensive emergency patient with one organ involved are 16 (32%) two organs involved are 30 (60%) and three involved are 4(8%).

Table 10 – OUTCOME

HOSPITAL OUTCOME	Frequency	Percentage
DISCHARGE	38	76
EXPIRED	12	24
TOTAL	50	100.0

Out of 50 patients , 24% (12) patients was expired and 76% (38) of patients were discharged with normotensive status .

DISCUSSION

The present study was taken among 50 patients to describe the clinical profile and outcome of hypertensive emergencies in patients attending PES Hospital.

In the present clinical study of hypertensive emergencies in PES Hospital, Kuppam, the number of males presenting with hypertensive emergencies were more than the number of females. 72% of the patients were males.

Martin JF et al8., in their study on hypertensive crises, observed that 55% of patients were males among patients with hypertensive emergencies. The proportions of males in hypertensive emergencies were also higher in the study by Zampaglione B et al.9 This is probably due to an increased susceptibility of males compared with females to hypertension-related target organ damage. This possibility is revealed in the Framingham study, which showed that the incidence of coronary arterial disease in men increased in an almost linear mode as age increased. The proportions of males were higher when studying the group of patients less than 50 years of age. The majority of female patients belonged to the postmenopausal age group, which shows the susceptibility of postmenopausal age to end-organ damage. This is also due to the fact that postmenopausal female hemodynamics is not very much different from the male profile concerning blood pressure .44,45Decade wise distribution of age shows the largest groups belonging to the fifth and sixth decade at the time of presentation with 48% and 31.2%, respectively. The study of Kadima JN et al46 sample comprised of 57.7% of men against 42.3% women, supporting world statistics that show both sexes would be exposed in the same way, whatever the general trends show that men are exposed. The population above 60-88 years old was the most affected by HBP in this study (48%).

Clinical features

Analyzing the presenting symptoms, the largest group of patients in the present study, presented with a headache (54%) followed by neurological deficit (48%) giddiness(44%), vomiting (44%) dyspnoea (30%) and chest pain (24%). This was similar to the study by Martin JF et al8, who, in their study, found presenting symptoms of neurological deficits, dyspnoea, and chest pain in 48%, 25% and 18% of their patients. Zampaglione B et al9, in their study, had more patients presenting with chest pain (27%) followed by dyspnoea (22

%) and neurological deficits (21%). In the study of Katz et al47, the symptoms included breathlessness (29%), chest pain (26%), headache (23%), altered mental status (20%) and focal neurologic deficit (11%). In a study, Patne SV et al48, observed that neurological deficit (48%), followed by dyspnoea (24%) and chest pain (20%) Varun MS et al49 presentation of hypertensive emergency was commonly showed Headache (48%), Vomiting (48%), Giddiness (38%), Dyspnoea (22%), Loss of consciousness (22%) Followed by chest pain (20%), Blurring of vision (20%) and weakness of limbs (14%).

Neurological deficits in the present study varied from hemiparesis (38%), convulsions (3%), and visual deficits (24%). Hemiparesis accounted for the largest group of patients with neurological deficits. 52% of patients were not found with any neurological deficit. The majority of patients in the present study were previously known hypertensives (68%) Martin et al. and noticed a large number of patients (83%) in their study to be previously diagnosed hypertensives. Zampaglione B et al9 report a larger number, with (92%) of known hypertensives among their patients. This evidence confirms that hypertensive emergencies were higher in patients with previously known hypertension. This also shows that patients with hypertension are at a higher risk of developing a hypertensive emergency, more so if they do not adhere to antihypertensive therapy.

In the present study, 74.29% among the known hypertensives ignored their hypertensive status and discontinued antihypertensive medications, which would have put them at a higher risk for acute target organ damage and hypertensive emergency.

Co morbidities

Diabetes mellitus and dyslipidemia were the other risk factors present in the present group of patients. Patients with diabetes mellitus and dyslipidemia were 30.7% and 40%, respectively, in the present study. The number of patients with diabetes mellitus was 26% in the study done by Martin JF et al.8 These risk factors would have added to premature atherosclerosis and coronary artery disease in these patients predisposing them to acute target organ damage.

In the present study the risk factor was smoking which is prevalent in 40% (23) followed by dyslipidemia (40%) and alcohol (26%). In the study of Kadima JN et al,46 showed an about 50% of patients were alcohol drinkers and tobacco smokers. Alcohol or smoking can increase the risk of complications when associated with aging. These risk factors would have added to premature atherosclerosis and coronary artery disease in these patients predisposing them to acute target organ damage. The prevalence of arterial hypertension in diabetic patients is greater when compared with that in nondiabetic patients (40-50% and 20%, respectively).50

Metabolic abnormalities (hyperglycemia, hyperinsulinemia, and dyslipidemias) may play a role in the pathogenesis and complications of arterial hypertension, as seen in the present study Mean BP recordings The highest recorded systolic blood pressure was 260 mm Hg with a mean systolic blood pressure of 204.54 ± 14.39 mm Hg. The highest diastolic blood pressure recorded was 160 mmHg, with a mean of 126.25 ± 21.30 mm Hg.

Martin JF et al8 in their study reports a mean systolic blood pressure of 193± 26 mm Hg in their patients and a mean diastolic blood pressure of 129 ± 12 mm Hg .

The mean reduction in blood pressure in one hour after admission to the hospital was 99 mm Hg of systolic blood pressure and 66 mm Hg of diastolic blood pressure. Blood pressure levels at admission were higher in the group of patients who expired compared to those who were

discharged from the hospital. The higher levels of blood pressure would have added to more severe target organ damage in these patients, with an adverse outcome. This indicates a worse prognosis with higher levels of blood pressure at presentation.

Drug compliance

In this present study the of hypertensive cases, drug compliance was seen only 74.26%.

In the study Patne SV et al⁴⁸, 23% among the known hypertensive ignored their hypertensive status and discontinued antihypertensive medications which would have put them at a higher risk for acute target organ damage and hypertensive emergency.

Evaluation of fundus revealed changes ranging from hypertensive retinopathy to papilloedema in 60 percent of patients. Papilledema was seen in 3 % of patients, which is evidence of ongoing target organ damage in these patients. In the present study out of 50 patients on Fundus examination 60 % were found with no abnormality. Exudative pattern was more commonly seen with higher grades Of hypertension. Lowered incidence of grade III and grade IV may also be due to lesser life expectancy of patients with grade III or grade IV hypertensive retinopathy.

Renal involvement

Renal changes amounting to hypertensive target organ damage was seen in five patients. Renal dysfunction in the form of raised serum urea and creatinine was seen in 24% and 18% of patients, respectively

Singh J et al⁵¹ reported similar findings in their study of 200 patients of hypertensive retinopathy. Grade II retinopathy was present in maximum number of cases (50%) followed by Grade I(24%), Grade III (15%) and Grade IV (11%). In this present study ,On ultrasound abdomen having renal parenchymal changes grade I changes were found in 12.99% (10) and grade II changes were found in 6.49% (5).

In the study of Dhadke SV et al,⁵² 10 patients (20%) had medical renal parenchymal disease, 6 patients (12%) had chronic kidney disease, one patient had renovascular involvement in the form of renal artery stenosis, 33 patients (66%) had normal ultrasound findings.

The central nervous involvement ,In the present study, the central nervous involvement was seen in 48 % of patients . Most common presented with hemiparesis 38 %, convulsion 6 % and visual defects 4 % remaining 52 % are normal. In the study of Dhadke SV et al,⁵² the central nervous system involvement was seen in 6 (32%) of the patients with hypertensive emergencies. 2 patients came with transient ischemic attack (4%), 7 patients (14%) came with cerebral infarction, 5 patients (10%) presented with intracerebral bleed, 2 patients (4%) came with hypertensive encephalopathy. 34 patients (68%) had no evidence of CNS involvement.

Hyponatremia was observed in 29 % of patients. 11.6 % of the patients had hypokalemia compared to 12 % with hyperkalemia, reflecting secondary aldosteronism from increased renin secretion induced by intrarenal ischemia. A study by Patne SV et al,⁴⁸ showed Hyponatremia was observed in 28% of patients. 14% of the patients had hypokalemia.

Microalbuminuria was seen in 36% of the patients, which puts these patients at a higher risk for hypertension-related renal disease compared to the patients without proteinuria.

Computed tomography of the brain showed intracerebral hemorrhage as the commonest cause for the neurological

target organ damage followed by cerebral infarct and subarachnoid hemorrhage.

Voltage criteria suggestive of left ventricular hypertrophy on ECG were seen in 24 % of patients. Similar to this, in a study by Patne SV et al⁴⁸ showed acute left ventricular failure in 28% and unstable angina in 14%.

A study was done by Lip GY et al,⁴⁴ on complications and survival of 315 patients with malignant phase, hypertension found low median survival time in patients with proteinuria and high serum urea and serum creatinine levels at presentation and if left ventricular hypertrophy was detected on the electrocardiogram. These findings in a patient in hypertensive emergency situations may help in prognosticating these patients.

Organs involvement

Evaluation for target organ damage in patients in the present study showed intracerebral haemorrhage as the commonest cause (34 %) followed by left ventricular failure (20. %), unstable , acute myocardial infarction (4 %) IHD acute LVF (14 %), acute myocardial infarction with left ventricular failure (2 %) and hypertensive encephalopathy (2 %).

Zampaglione B et al⁹, in their study, observed target organ damage in the form of Intracerebral hemorrhage (4.5%) left ventricular failure (23 %), Acute ischaemic stroke (24 %) in their patients.

Varun MS et al,⁴⁹ evaluation for target organ damage showed that acute MI as the commonest cause (38%) followed by Intracerebral hemorrhage (23%), subarachnoid hemorrhage (22%) followed by malignant hypertension (9%) left ventricular failure (6%) and hypertensive encephalopathy (2%) In the study of Dhadke SV et al⁵², of the patients with three or more target organ involvement 13 patients out of 50 (26%) had three target organ involvement in the form of CNS, Renal and Retinal involvement.

In this study out of 50 patients ,one organ is involved in 32 % patients, two organs are involved in 60 % patients and Three organs are involved in 8 % of patients the overall patient population presenting to the Hospital.

A study by Martin JF et al.⁸ shows Intracerebral hemorrhage (17%) left ventricular failure (25 %), Acute ischaemic stroke (39 %), and acute myocardial infarction in (8%) their patients. The outcome of the study showed in-hospital mortality of 23.38 percent among these patients.

In a study by Zampaglione B et al,⁹ Done in emergency room, Hypertensive urgency accounted for 76% and Hypertensive emergency accounts for 24%.

In the study of Kadima JN et al,⁴⁶ shows that too many people are living with hypertension as silent condition and remained ignorant about their status and are left untreated. They finally rush to hospital in hypertension urgency or emergency episodes. In fact, the majority of patients present with hypertension stage III (BP>180/110) including 24% Hypertensive urgency and 76% Hypertensive emergency.

The JNC8 recommends reduction of BP levels below 150/90 mm in patients aged 60 years or older, reduction below 140/90 mm Hg in patients younger than 60 years as well as those older than 18 years with either chronic kidney disease (CKD) or diabetes. the therapeutic goal BP<140/90 was achieved in 87% of patients within 6 to 30 days after the treatment was initiated. Failure and death affected 12.6% and 2.4% respectively within the 30 days of follow-up. Resistant hypertension also is a common clinical problem faced by both primary care clinicians and specialists.

This fact was observed by Nobre F et al⁵³, who reported that 64.5% of the Hypertensive patients, characterized as having hypertensive pseudocrisis, were inappropriately treated in the emergency unit as having hypertensive crisis. In patients experiencing a pseudocrisis, independent of blood pressure levels, neither evidence of acute target-organ lesions nor an immediate life threat exists, when the patient is assessed by use of usual means (physical examination, funduscopy, biochemical tests, electrocardiography, chest X-ray, and computerized tomography of the brain).

These are usually hypertensive patients, who ,although under treatment, are not controlled, being, therefore, referred to the emergency unit of the hospital. These patients are symptomatic or asymptomatic, but their blood pressure levels are very elevated. It is worth noting that, in these cases, new medical counseling and a reassessment are required. Another group of hypertensive patients may have a transient blood pressure elevation caused by any emotional, painful, or uncomfortable event, such as migraine, vertigo, vascular headaches of muscle-skeletal origin, and manifestations of panic disorder, also characterizing a hypertensive pseudocrisis.

Another possible explanation, which should not be forgotten, is the greater number of hypertensive individuals currently diagnosed and treated, which results in better blood pressure control with a lower rate of complications, and hence a lower prevalence of hypertensive emergencies.

SUMMARY

The present study was taken to describe the clinical profile and outcome of hypertensive emergencies in patients attending PES Hospital. This observational study was conducted among 50 hypertensive emergency cases. Randomly selected patients were taken from department of general medicine as per inclusive and exclusive criteria.

Maximum hypertensive emergency cases were belongs to 56-65 years age group (40%) and ≥66 years (34%).

Majority of the study subjects were male patients (72%). Common symptoms of hypertensive emergency patients were headache (54%), giddiness (44%), vomiting (44%), dyspnea (30%) and chest pain (24%).

Major risk factor of hypertensive emergency was smoking which is prevalent in 46% (23) followed by alcohol (26%) 68% of hypertensive emergency patients were K/C/O hypertension. Maximum cases (42 %) were suffering from 6-10 yrs .40 % of HTN cases were from 5 years.

In present study drug compliance was seen only 74.29% of hypertension patients. 25% of HTN cases were not stick to HTN medication as per prescribed manner.

Prevalence of diabetes in hypertensive emergency cases was 307%.

Commonest neurological deficit was hemiparesis (38%) and convulsions (3%) Grade I fundus changes in 18 %, grade II 26 %, grade III 10 % and papilloedema was seen in 3 % patients. 30 (15) of hypertensive emergency cases were diagnosed with left ventricular failure . Major changes in ECG was ST-T changes in 52 (26), LVH (12 %) and LVH,ST-T changes in 7 (14) Cardiomegaly was seen in 30% (15) and pulmonary oedema in 8 % (4) seen on X-ray.

Grade I ultrasound changes were found in 10 % (5) and grade II changes were found in 3% (6).

Maximum proportion of patients were diagnosed with CVA-intra cranial bleed (34%) followed by acute left ventricular failure (20%), IHD-acute LVF (14%) and CVA-infarct (12

%) .Other diagnosis conditions were LVH (12 %) and MI (4 %)

Majority of hypertensive emergency patient's two organs involved (60 %) Most common electrolyte imbalance was hyponatremia (20 %) followed by hypokalemia in 10 % and hyperkalemia (3 %) Hypertensive emergency in- hospital mortality was 24 %. 76.62% (59) of patients were discharged with normotensive status

CONCLUSION

Maximum of patients presenting in hypertensive emergency belonged to the fifth and sixth decades of age.

Males have more chances of developing hypertensive emergencies compared to females.

Known hypertensives are at a higher risk of presenting with acute target organ damage associated with hypertensive emergency.

Commonest mode of presentation is with a neurological deficit,i.e hemiparesis.

Hyponatremia and hypokalemia were common in patients with hypertensive emergencies.

Acute intracerebral haemorrhage is the commonest form of target organ damage encountered in the this study The in-hospital mortality among these patients with hypertensive emergency was 30 percent.

REFERENCES

- Lloyd-Sherlock P, Beard J, Minicuci N, Ebrahim S, Somnath Chatterji S. Hypertension among older adults in low and middle-income countries: prevalence, awareness and control. *Int J Epidemiol*. 2014;43:116-28.
- World Health Organization. Global status report on non-communicable diseases 2018. Geneva :WHO Document Production Services. Available at: http://apps.who.int/iris/bitstream/10665/128038/1/9789241507509_eng.pdf
- Kazem R, Connor AE, Stephen M. The Epidemiology of Blood Pressure and Its Worldwide Management. *Circulation Res*. 2015;116:925-36.
- Lemogoum D, Seeday YK, Mabadeje AF, Mendis S, Bovet P, Onwubere B, Blackett KN, Lenfant C, Kabangu JR, Block P, Belhocine M. Recommendations for prevention, diagnosis and management of hypertension and cardiovascular risk factors in sub-Saharan Africa. *J Hypertens*. 2003 Nov 1;21(11):1993-2000.
- Kayima J, Wanyenze RK, Katamba A, Leontsini E, Nuwaha F. Hypertension awareness, treatment and control in Africa: a systematic review. *BMC Cardiovascular Disorders*. 2013 Dec;13(1):54.
- Gupta R. Trends in hypertension epidemiology in India. *J Hum Hypertens* 2004 Feb;18(2):73-78.
- Waris M S. Needs for national hypertension control programme. *Indian H J*. 1995.47;409-10.
- Martin JF, Higashiana E, Garcia E, Luizon MR, Cipullo JP. Hypertensive crisis profile: Prevalence and clinical presentation. *Arch Bras Cardiol*. 2004 Aug;83(2):125-30.
- Zampaglione B, Pascale C, Marchisio M, Cavallo-Perin P. Hypertensive urgencies and emergencies: Prevalence and clinical presentation. *Hypertens*. 1996 Jan;27(1):144-7
- Fuchs FD, Chambless LE, Whelton PK, Nieto FJ, Heiss G. Alcohol consumption and the incidence of hypertension: The Atherosclerosis Risk in Communities Study. *Hypertens*. 2001 May;37(5):1242-50.
- Xin X, He J, Frontini MG, Ogden LG, Motzamai OI, Whelton PK. Effects of alcohol reduction on blood pressure: a meta-analysis of randomized controlled trials. *Hypertens*. 2001 Nov;38(5):1112-7.
- James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland DT, LeFevre ML, MacKenzie TD, Ogdegebe O, Smith SC. Evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *JAMA*. 2014 Feb;311:507-20.
- Mancia G, Fagard R, Narkiewicz K, Redón J, Zanchetti A, Böhm M, hristiaens T, Cifkova R, De Backer G, Dominiczak A, Galderisi M. 2013 ESH/ESC Guidelines for the management of arterial hypertension: the Task Force for the management of arterial hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). *Blood pressure*. 2013 Aug 1;22(4):193-278.
- Cameron JS, Hicks J, Carl G. Frederick Akbar Mahomed and his role in the description of hypertension at Guy's Hospital. *Kidney Int*. 1996 May 1;49(5):1488-506.
- Mancia G, Scipione Riva-Rocci. *Clin Cardiol*. 1997 May;20:503-504.
- Veterans Administration Cooperative Study Group on Antihypertensive Agents. Effects of treatment on morbidity in hypertension. Results in patients with diastolic blood pressures averaging 115 through 129 mm Hg. *JAMA*. 1967;202:1028-1034.
- Chobanian AV. National heart, lung, and blood institute Joint national committee on prevention detection and treatment of high blood pressure . The seventh report of joint national committee on prevention detection and treatment of high blood pressure. *JAMA* 2003;289: 2560-2572.
- Singh WG, Aslam N. Hypertensive emergencies-Hypertension an

- international monograph. *IJPC*. 2001;350.
19. Sargio LZC. Hypertensive Crisis. In: Parrillo JE, Dellinger RP, editors: *Critical Care medicine: principles of diagnosis and management*. 4th ed. Philadelphia: Elsevier Saunders, 2014.
 20. Henry RB, George LB, William JE. Systemic arterial hypertension. In: Fuster V, Alexander RW, O'Rourke RA, editors. *Hurst's - The Heart*. 10th ed. United States. McGraw - Hill.
 21. Elliott WJ. Hypertensive emergencies. *Crit Care Clin*. 2001 Apr 1;17(2):435-51.
 22. Scardo JA, Vermillion ST, Newman RB, Chauhan SP, Hogg BB. A randomized, double-blind, hemodynamic evaluation of nifedipine and labetalol in preeclamptic hypertensive emergencies. *Am J Obstet Gynecol*. 1999 Oct 1;181(4):862-6.
 23. Mansoor GA, Frishman WH. Comprehensive management of hypertensive emergencies and urgencies. *Heart disease (Hagerstown, Md.)*. 2002;4(6):358-71.
 24. Vaughan CJ, Delanty N. Hypertensive emergencies. *The Lancet*. 2000 Jul 29;356(9227):411-7.
 25. Rudd P, Osterberg. GL. Hypertension. In: Topol EJ, editors. *Cardiovascular Medicine*. 2nd ed. Lipincott Williams & Wilkins; 2002.
 26. Krishnan A, Garg R, Kahandaliyanage A. Hypertension in the South East Asia Region: an overview. *WHO Regional Health Forum*. 2013; 17: 10- 11.
 27. Pacheco H C, Victorino N M, Urquiza J P, Castillo AA, Herrera U J, Mendoza AA, Manzur FA, de la Cruz JL, Sánchez CM. Patients With Hypertensive Crises Who Are Admitted to a Coronary Care Unit. *Clinical Characteristics and Outcomes*. *The Journal of Clinical Hypertension*. 2013 Mar; 15(3):210-214.
 28. Shah M, Patil S, Patel B, Arora S, Patel N, Garg L, Agrawal S, Jacobs L, Steigerwalt SP, Martinez MW. Trends in Hospitalization for Hypertensive Emergency, and Relationship of End-Organ Damage With In-Hospital Mortality. *Am J Hypertens*. 2017 Jul;30:700-6.
 29. Mehrotra S, Ravi R, Kasliwal R R. Hypertensive crisis an update. *Indian Heart J*. 2010;62:440-446.
 30. Kaplan NM, Victor RG. *Kaplan's clinical hypertension*. 10th ed. Philadelphia: Lippincott Williams and Wilkins; 2010. Chapter 8, Hypertensive crisis; p. 274-287.
 31. Broderick JP, Adams Jr HP, Feinberg W, Barsan W, Feldmann E, Grotta J, Krieger D, Kase C, Mayberg M, Tilley B, Zabramski JM. Guidelines for the management of spontaneous intracerebral hemorrhage: a statement for healthcare professionals from a special writing group of the Stroke Council, American Heart Association. *stroke*. 1999 Apr;30(4):905-15.
 32. Kawazoe N, Onoyama K, Abe I, Takishita S, Ueno M, Fujishima M, Kobayashi K, Muratani H, Kimura Y, Tomita Y, Tsuchihashi T. Pathophysiology in malignant hypertension: With special reference to the renin-angiotensin system. *Clin Cardiol*. 1987 Sep;10(9):513-8.
 33. Webster J, Petrie JC, Jeffers TA, Lovell HG. Accelerated HTN - Patterns of mortality and factors affecting outcome in treated patients. *QJM*. 1993; 86: 485-493.
 34. Impey L. Severe hypotension and fetal distress following sublingual administration of nifedipine to a patient with severe hypertension at 33 weeks. *Br J Obstet Gynecol*. 1993 Oct;100(10):959-961.
 35. Wachter RM. Symptomatic hypotension induced by nifedipine in the acute treatment of severe hypertension. *Arch Intern Med*. 1987 Mar;147(3):556-558.
 36. Lau J, Antman EM, Jimenez-Silva J, Kupelnick B, Mosteller F, Chalmers TC. Cumulative meta-analysis of therapeutic trials for myocardial infarction. *N Eng J Med*. 1992 Jul 23;327(4):248-54.
 37. Philip H S, Stephen R P. Severely increased blood pressure in emergency department. *Ann Emerg Med*. 2003 Apr; 41(4):513-529.
 38. Murphy C. Hypertensive emergencies. *Emerg Med Clin North Am*. 1995 Nov; 13(4):973-1007.
 39. Broderick JP, Brott T, Tomsick T, Miller R, Huster G. Intracerebral hemorrhage more than twice as common as subarachnoid hemorrhage. *J Neurosurg*. 1993 Feb 1;78(2):188-91.
 40. Shaprio LM, Beevers DG. Malignant HTN: Cardiac structure and function at presentation and during therapy. *Br Heart J*. 1983 May;49:477-489.
 41. Zahn KA, Li RL, Pursell RA. Cardiovascular toxicity after ingestion of "herbal ecstasy". *J Emergency Med*. 1999 Mar 1;17(2):289-91.
 42. Ventura HO, Mehra MR, Messerli FH. Desperate diseases, desperate measures: tackling malignant hypertension in the 1950s. *Am Heart J*. 2001 Aug 1;142(2):197-203.
 43. Nadar S, Beevers DG, Lip GY. Echocardiographic changes in patients with malignant phase hypertension: the West Birmingham Malignant Hypertension Register. *J Hum Hypertens*. 2005 Jan;19(1):69.
 44. Lip GY, Beevers M, Beevers DG. Complications and survival of 315 patients with malignant-phase hypertension. *J Hypertens*. 1995 Aug;13(8):915-24.
 45. Modi P, Arsiwalla T. Hypertensive Retinopathy. In *StatPearls [Internet]* 2019 Jan 23. StatPearls Publishing.
 46. Messerli FH, Garavaglia GE, Schmieder RE, Sundgaard-riise KI, Nunez BD, Amodeo C. Disparate cardiovascular findings in men and women with essential hypertension. *Ann Int Med*. 1987 Aug 1;107(2):158-61.
 47. Owens JF, Stoney CM, Matthews KA. Menopausal status influences ambulatory blood pressure levels and blood pressure changes during mental stress. *Circulation*. 1993 Dec;88(6):2794-802.
 48. Kadima JN, Bavhure B, Sepa JD, Murhura D. Hypertensive Urgencies or Emergencies and Co-Morbidities in Bukavu Referral Hospitals: Clinical Profile, Management Regimens, Outcomes and Drug Related Problems. *JBCP*. 2018 Dec;9(1):47.
 49. Katz JN, Gore JM, Amin A, Anderson FA, Dasta JF, Ferguson JJ, Kleinschmidt K, Mayer SA, Multz AS, Peacock WF, Peterson E. Practice patterns, outcomes, and end-organ dysfunction for patients with acute severe hypertension: the Studying the Treatment of Acute hyperTension (STAT) registry. *Am Heart J*. 2009 Oct 1;158(4):599-606.
 50. Patne SV, Chintale KN, Tungikar S, Dhadse P, Dukare SR. Clinical study of hypertensive emergencies in young patients in tertiary health care centre. *Asian Pac J Health Sci*. 2016; 3(1):7-15.
 51. Singh J, Tewari MK, Khosla PK, Azad R. Hypertensive retinopathy. *Indian J Ophthalmol*. 1983;31:971-4.
 52. Dhadke SV, Dhadke VN, Batra DS. Clinical Profile of Hypertensive Emergencies in an Intensive Care Unit. *J Assoc Physici Ind*. 2017 May;65:18-22.
 53. Nobre F, Chauchar F, Viana JM, Pereira CJ, Lima NK. Evaluation of hypertensive care in an emergency department and in a hypertension outpatient clinic. *Arq Bras Cardiol*. 2002;78(2):159-61.
 54. H.K.Chopra c, Venkara s, Ram Recent Guidelines for Hypertension *AHA journal, Circulation Research*. 2019;124:984-986 March 2019.