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An Investigation On Clinical Profile And Outcome In Patients Presenting With Hypertensive Emergency Referred to a Tertiary Hospital

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Abstract

A hypertensive emergency can present as urgency or emergency that requires immediate medical treatment. A hypertensive urgency is defined as having two or more readings where the systolic is elevated at 180 mmHg or higher or diastolic of 110 mm Hg or higher without associated organ damage, may or may not be accompanied by symptoms such as severe headache, nosebleeds, shortness of breath or severe anxiety.

Keywords: Hypertensive, Headache, Symptoms, Nervous System

Introduction

Hypertensive crisis are clinical syndromes which are grouped as hypertensive urgency and hypertensive emergency and occurs as complication of untreated or inadequately treated hypertension. In such cases, the blood pressure may be elevated severely and precipitously and lead to a situation termed as 'hypertensive crises. This is distinguished from a hypertensive emergency where target organ damage has occurred requiring the individual seek immediate emergency medical assistance.

A majority of patients with hypertensive crisis have no evidence of end-organ damage and do not require immediate work up and these patients can be managed with oral antihypertensive medications, usually as outpatients.

Hypertensive crisis or previously known as malignant hypertension is characterized by an accelerated and severe increase in blood pressure secondary to increase in catecholamines, sympathetic nervous system activity, endothelial dysfunction, renin–angiotensin system activation, or acute stress and is associated with acute end-organ damage. The evidence of end organ damage includes stroke, myocardial infarction aortic dissection, pulmonary edema and acute renal failure, in the setting of acute rise in blood pressure.

The root cause of hypertensive crisis is hypertension, which is the most common, readily identifiable, and reversible risk factor for myocardial infarction, ischemic and hemorrhagic stroke, heart failure, atrial fibrillation, aortic dissection, and peripheral arterial disease. Without intervention, hypertension may progress to hypertensive crisis and cause end organ damage and thereby increasing the morbidity and mortality.

Hypertension is known to be responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke. Globally cardiovascular disease accounts for approximately 17 million deaths a year of these, complications of hypertension account for 9.4 million deaths worldwide every year.

The incidence and prevalence of hypertensive crisis is expected to rise parallel with increase in prevalence of hypertension. The prompt recognition of a hypertensive crisis with the appropriate diagnostic tests and management will lead to the adequate reduction of blood pressure, thereby reducing the incidence of morbidity as well as of fatal outcomes. It is important to identify the patients that develop these acute hypertensive conditions in order to reduce the mortality and morbidity.

Materials & Methods

Study type: Prospective observational hospital based study.

Period of study: January 2022 to December 2022

Duration of study: One Year

Inclusion Criteria

1. Patients with age ≥18 years with systolic blood pressure of ≥180 and/or diastolic blood pressure of ≥110 mm Hg.
2. Patients previously diagnosed with hypertension with or without medications systolic blood pressure of ≥180 and/or diastolic blood pressure of ≥110 mm Hg.

Exclusion criteria

1. Pregnant women.
2. Patients with traumatic injury.

Primary survey & initial resuscitations were followed by detailed secondary survey including history taking which included duration of hypertension, age of onset, antihypertensive therapy, compliance to medications, symptoms suggestive of secondary causes of hypertension, lifestyle factors, such as dietary intake of salt, alcohol, smoking, tobacco and physical activity. History of symptoms of neurological, cardiac, respiratory and renal system and associated history of diabetes mellitus and dyslipidemia was taken. Also history was taken regarding any use of medications that influence blood pressure such as oral contraceptives, cocaine, amphetamines, steroids, nonsteroidal anti-inflammatory drugs, erythropoietin, and cyclosporine.

Blood pressure measurement technique

Patient conditions

The patient should sit quietly with the back supported for five minutes and the arm supported at the level of heart. The patient should not take any caffeine or tobacco during the hour preceding the reading and no smoking during the preceding 30 minutes.

Equipment

Mercury sphygmomanometers are usually used for measurement of BP. Proper-sized cuff should be used is and the bladder should encircle and cover two third of the length of the arm. (as shown in table below)

Technique

First palpate the brachial pulse and then rapidly inflated the cuff to 20 mmHg above the point where the brachial pulse disappears. This pressure should be noted, as this pressure is the approximate systolic pressure.

Investigations

A. Hematological-Hemoglobin, Packed Cell Volume, Platelet count, Total &

Differential count (TLC & DLC).

B. Biochemical

1. Random blood sugar (RBS).

2. Urea, creatinine.

3. Serum electrolytes

4. Troponin T (For patients with chest pain and dyspnea)

5. Lipid Profile

C. Chest radiograph and electrocardiography was done in all patients.

D. Electrocardiography was done in all patients.

E. Echocardiography was done in all patients.

F. Computed tomography:

Outcome in these patients were noted till the time of discharge or death.

Statistical Methods

Data are presented as mean ± standard deviations(SD) for continuous variables and in number and percentages for categorical variables. Categorical variables were analyzed accordingly with the chi-square test or fisher exact test. For all statistical analyses, a probability (P Value) of less than 0.05 was considered to be statistically significant. All data were statistically analyzed by using IBM SPSS 19 software. MS WORD 07& MS EXCEL 07 were used to build up charts, tables and diagrams as required.

Results

Table 1: Distribution of Hypertensive Crisis into Hypertensive Emergency (HE) and Hypertensive Urgency (HU)

		Frequency	Percent
Valid	HE	135	60.3
	HU	89	39.7
	Total	224	100.0

In our study out of 224 patients with hypertensive crisis, 135(60.3%) patients presented with Hypertensive Emergency and 89(39.7%) patients presented with Hypertensive Urgency.

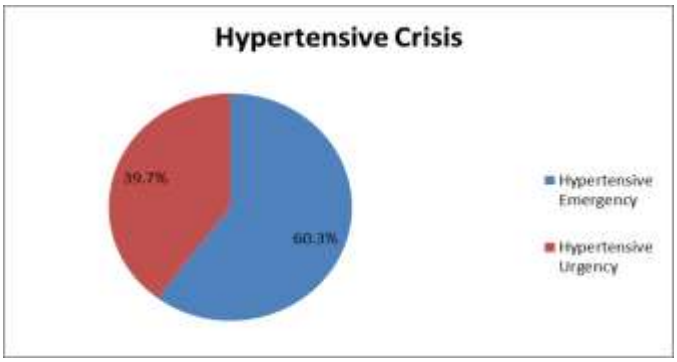

Figure 1: Pie diagram showing in Hypertensive Emergency (HE) and Hypertensive Urgency(HU)

Table 2: Age based distribution in patients with Hypertensive Crisis (HE and HU)

			Hypertensive Crisis			Total
		HE	%	HU	%	
Age Group in Years	18-29	1	0.74%	0	0	1
	30-39	8	5.9%	2	2.2%	10
	40-49	18	13.3%	14	15.7%	32
	50-59	36	26.6%	27	30.33%	63
	60-69	47	34.8%	27	30.33%	74
	70+	25	18.5%	19	21.3%	44
Total		135		89		224

The table shows age wise distribution of patients and highest number of patients were seen in the age group of 60-69 years with 47(34.8%) in Hypertensive Emergency and 27(30.33%) in Hypertensive Urgency.

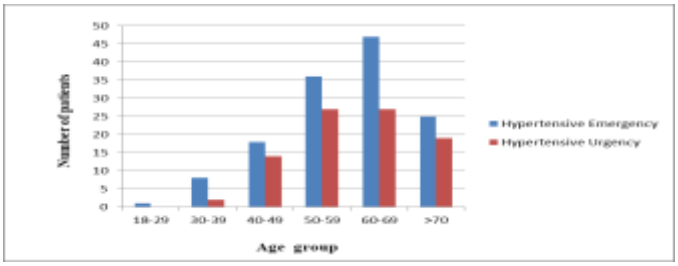

Figure 2: Bar diagram showing age based distribution in the HE and HU study population

Table 3: Gender based distribution in patients with Hypertensive Crisis

		Hypertensive Crisis				Total	P value
		HE		HU			
Sex	Male	83	61.5%	56	62.9%	139	0.47
	Female	52	38.5%	33	37%	85	
Total		135		89		224	

The table showing gender based distribution among HE and HU patients. In HE there were 83(61.5%) male and 56(62.9%) in HU. Among females, 38.5% in HE and 37% in HU.

Discussion

In the present study, out of 200 patients who presented to the Emergency Medicine Department with hypertensive crisis,135 patients had evidence of end organ damage based on clinical features and relevant investigations and were classified as patients with hypertensive emergency. The remaining 89 patients who had no evidence of end organ damage were classified as patients with hypertensive urgency.

Conclusions

The hypertension emergencies are consequence of uncontrolled hypertension, it is important to educate and bring awareness among public regarding the screening, early detection, and adherence to prescribed medication for hypertension to avoid adverse clinical outcomes.

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