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Research Article

HYPERTENSIVE EMERGENCY AND CARDIAC TARGET ORGAN DAMAGE AT TERTIARY CARE HOSPITAL HYDERABAD

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Abstract:

OBJECTIVE: To determine the frequency of hypertensive emergency and cardiac target organ damage at tertiary care hospital Hyderabad.

PATIENTS AND METHODS: This descriptive case series of one year was conducted from 01 January 2015 to 31 December 2015 in the department of cardiology at tertiary care hospital Hyderabad. The inclusion criteria of the study were patients ≥ 30 years of age, either gender with systolic blood pressure of ≥ 180 mm Hg or diastolic blood pressure of ≥ 110 mm Hg have evidence of target organ damage, either clinically or investigation (imaging i.e. on ECG and ECHO) findings. The frequency and percentages were computed and the mean \pm SD was also calculated.

RESULTS: During one year study period total fifty patients were detected as hypertensive emergency. The mean age \pm SD for whole population was 58.98 ± 7.84 while the mean \pm SD for systolic and diastolic blood pressure for whole population was 210 ± 10 mm Hg and 120 ± 8 mmHg respectively. Majority of the patients belonged to urban population (65%) and were male population 35 (70%), the common identified symptoms were neurological deficit 20 (40%), headache 40 (80%) and shortness of breath 15 (30%). The known hypertensive, diabetic, smokers, obese and dyslipidemic were 30 (60%), 35 (70%), 30 (60%), 28 (36%) and 25 (50%). On chest X-ray cardiomegaly was identified in 15 (30%), common electrocardiographic and echocardiographic findings were ST/T wave changes 20 (40%), left ventricular hypotrophy 15(30%) and regional wall motion abnormality 13 (26%). The cardiac target organ damage detected were acute myocardial infarction (16%), left ventricular failure (16%) and acute MI and LVF (16%) while the mortality was observed in 8(16%) patients respectively.

CONCLUSION: Majority of subjects presented with hypertensive emergency had fifth and sixth decades of age with male gender and known hypertensive population predominance.

Keywords: Hypertensive emergency, Target organ damage, Hypertension

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INTRODUCTION:

Hypertension affects individuals across all age groups and classes and its relationship to risk of cardiovascular disorders is continuous, persistent and independent of other risk factors. [1] A number of cardiovascular, respiratory and nervous system symptoms are found to be associated in subjects with hypertensive emergency. [2, 3] Focal neurological deficits, shortness of breath, chest pain, and headache, visual problems are the commonest symptoms. [4, 5] The physician and cardiologist should sort out extensive survey in patients having these symptoms and with raised blood pressure to exclude hypertensive emergency. [6, 7] Although strategies exist for the treatment of hypertension but patients still present with hypertensive crises and emergencies.[8] The hypertensive emergency can be an end result of chronic hypertension, drugs non compliance or new onset of unrecognized essential hypertension and characterized by target-organs and immediate threat to life. [9-11] Due to the association of hypertensive emergencies with various cardiac complications, there is an urgent need to evaluate this condition so as to reduce the burden associated with hypertensive emergency in terms of increased mortality and morbidity within the population. [11,12] This study was conducted to sort out various modes of presentation, clinical, imaging profile and outcome hypertensive emergencies presented at tertiary care hospital Hyderabad.

PATIENTS AND METHODS:

The present study of one year (from 01 January 2015 to 31 December 2015) was conducted in the department of cardiology at tertiary care hospital

Hyderabad. The inclusion criteria of the study were patients ≥ 30 years of age, either gender with systolic blood pressure of ≥ 180 mm Hg or diastolic blood pressure of ≥ 110 mm Hg have evidence of target organ damage, either clinically or imaging findings while the exclusion criteria were patients less than 30 years of age, known case for chronic renal failure, congenital or valvular cardiac diseases, malignancy, autoimmune and connective tissues disorders and pregnant ladies. The informed consent was taken while the detailed history was taken and the relevant physical examination was performed whereas the routine and necessary investigations were advised accordingly. The blood pressure was recorded at the time of admission, after 1 and 24 hours and then at the time of discharge. The information obtained was saved on the proforma while all the measures for conducting the study were performed by the collaboration of whole research team. The data was saved and analyzed in SPSS 16, the frequency and percentages were computed and the mean \pm SD was also calculated.

RESULTS:

During one year study period total fifty patients were detected as hypertensive emergency. The mean age \pm SD for whole population was 58.98 ± 7.84 while the mean \pm SD for systolic and diastolic blood pressure for whole population was 210 ± 10 mm Hg and 120 ± 8 mmHg respectively. Majority of the patients belonged to urban population (65%) and the cardiac target organ damage was detected in 36 (72%) individuals. The results of the study are presented in Table 01 and 02.

TABLE 01: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF THE PATIENTS

PARAMETER	N=50	PERCENTAGE (%)
AGE (years)		
30-39	8	16
40-49	10	20
50-59	15	30
60+	17	34
GENDER		
Male	35	70
Female	15	30
PRESENTING SYMPTOMS		
Neurological deficit	20	40
Shortness of breath	15	30
Chest pain	25	50
Seizures	14	28
Blurring of vision	14	28
Headache	40	80

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KNOWN HYPERTENSIVE		
Yes	30	60
No	20	40
DIABETES MELLITUS		
Yes	35	70
No	15	30
SMOKING		
Yes	30	60
No	20	40
DYSLIPIDEMIA		
Yes	25	50
No	25	50
OBESITY		
Yes	28	56
No	22	44

TABLE 02: THE FINDINGS OF IMAGING AND OUTCOME

INVESTIGATION	N = 50	PERCENTAGE (%)
CHEST RADIOGRAPH		
Normal	30	60
Cardiomegaly	15	30
Pulmonary edema	05	10
ELECTROCARDIOGRAPH (ECG)		
Normal	15	30
ST / T changes	20	40
Left ventricular hypertrophy (LVH)	10	20
ST/T changes with LVH	05	10
ECHOCARDIOGRAPH		
Normal	10	20
Left ventricular dysfunction	12	24
Regional wall motion abnormality	13	26
Left ventricular hypertrophy	15	30
OUTCOME		
Recovered & discharged	42	84
Expired	08	16

TABLE 03: THE CARDIAC TARGET ORGAN DAMAGE

TARGET ORGAN DAMAGE	N= 36	PERCENTAGE (%)
Acute myocardial infarction (AMI)	08	16
Unstable angina	06	12
Left ventricular failure (LVF)	08	16
Acute MI and LVF	08	16
Hypertensive encephalopathy	03	6
Malignant hypertension	03	6

DISCUSSION:

In the present clinical study of hypertensive emergencies at tertiary care hospital, the male population was predominant. The proportions of males in hypertensive emergencies were also higher in the study by Everett B, et al. [13] This observation was also revealed in the Framingham study shown that the incidence of coronary arterial disease in male population is increased as age increased. [14] Majority of female population were in postmenopausal age group and shown susceptibility of postmenopausal age to end organ damage. Regarding symptoms, neurological deficit 20(40%), shortness of breath 15 (30%) and chest pain 25 (50%) , the observations are consistent with the study by Al-Bannay R, et al [15] reported neurological deficits, dyspnoea and chest pain in 50%, 30 % and 20 % of patients respectively while the findings were also observed by Zampaglione B, et al. [16] Majority of patients in the current series were known hypertensives 30 (60%). Kulkarni S, et al [17] observed huge number of subjects, (83%) to be previously identified as hypertensive while Robitaille C, [18] et al also reports a larger number of known hypertensive patients, revealed that hypertensive emergencies were found to be higher in known hypertensive individuals and shown that subjects with hypertension are at greater risk of having hypertensive emergency if they are not taking and placed on antihypertensive therapy. In current study 30% known hypertensive ignored their hypertension and discontinued antihypertensive therapy which placed them at a greater risk for hypertensive emergencies

In present study the diabetes and dyslipidemia was observed in 35 (70%) and 25 (50%) patients while the number of patients with diabetes mellitus and dyslipidemia was 50% and 40 % in the study by Nguyen NT et al. [19] These risk factors responsible for atherosclerosis and coronary artery predisposing them for hypertensive emergencies. Metabolic disorders (diabetes, obesity, and dyslipidemia) may play a role in the pathogenesis, acceleration and complications of hypertension [20] as observed by current study as well. The highest recorded systolic blood pressure was 220 mm Hg with mean systolic blood pressure of 210 ± 10 mm Hg while the highest diastolic blood pressure recorded was 140 mmHg with a mean of 120 ± 8 mm Hg whereas Zwieter PAV, observed mean systolic blood pressure of 190 ± 20 mm Hg and mean diastolic blood pressure of 110 ± 15 mmHg respectively.[21] The voltage criteria suggestive of LVH on electrocardiography were detected in 10 (20%) patients and 15 (30%) had left ventricular hypertrophy on echocardiography. The ST and T wave changes on electrocardiography and

regional wall motion abnormalities were observed in 20 (40%) and 13 (26%) patients. The findings are consistent with the study by Prakash O, et al and Bacharova L, et al. [22, 23]. Regarding outcome the recovery was detected in 42 (84%) patients while 08 (16%) were expired, the outcome of the study is consistent with the study by Rodriguez MA, et al and Janke AT, et al [24, 25]

CONCLUSION:

Majority of subjects presented with hypertensive emergency had fifth and sixth decades of age with male gender and known hypertensive population predominance. The existence of diabetes mellitus, obesity, smoking and dyslipidemia further accelerate the risk of developing hypertensive emergencies. The common symptoms observed were neurological deficit, shortness of breath, headache and visual impairment. The in-hospital mortality among hypertensive emergency patients was 16%. Thus, the larger and advance studies are needed to comment on the clinical profile of patients with hypertensive emergencies at different setups.

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