Original Research Paper

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General Medicine

TARGET ORGAN DAMAGE IN NEWLY DETECTED HYPERTENSIVE PATIENTS

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ABSTRACT **Introduction:** Hypertension (HTN) is a long standing medical condition in which the blood pressure (BP) with in the arteries are elevated persistently, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole) and equate to a maximum and minimum pressure, respectively. Target organ damage assessment in hypertension is a better predictor of cardiovascular risk in hypertensive patients. **Aims And Objective:** To assess the prevalence of target end organ damage in newly detected hypertensive patients. To analyse the severity of hypertension at the time of diagnosis based on target organ damage. **Material And Methods:** Data consists of primary data will be collected by the principal investigator directly from newly detected hypertensive patients. attending Medicine OPD and IPD in tertiary care Hospital. **Result And Observations:** It was observed during the study that there is significant correlation between the magnitude of blood pressure at the time of diagnosis and prevalence of end organ damage. Higher the blood pressure at the time of diagnosis, more is the risk of presence of end organ damage at that time. In this study there is correlation between blood pressure at time of diagnosis and presence of retinopathy and hypertensive heart disease. Such patients have increased risk of other complications of hypertension leading to increased risk of cardiovascular mortality. **Discussion:** It was observed during the study that presence of TOD in our study patients on their first arrival at the hospital indicates unawareness among the general population. In this study, as the magnitude of blood pressure is higher at the time of diagnosis, there are chance of presence of end organ damage. The presence of signs of organ damage confers an increased cardiovascular risk to any level of blood pressure. This signifies the importance of evaluating for all the end organ damage at the time of diagnosis of the disease. This reduces risk of morbidity and mortality and prevention of complications.

KEYWORDS : Hypertension, Target Organ Damage

INTRODUCTION

Hypertension (HTN) is a long standing medical condition in which the blood pressure (BP) with in the arteries are elevated persistently, which depend on whether the heart muscle is contracting (systole) or relaxed between beats (diastole) and equate to a maximum and minimum pressure, respectively.

HTN is difficult to diagnose since it is asymptomatic, and BP represents a dynamic measure with inherent minute-to-minute variability and the application of incorrect techniques lead to inaccurate measurements. Furthermore, awareness, treatment, and control of HTN and also techniques available for measurement of BP among healthcare professionals remain suboptimal. Hence, Hypertension is a silent killer disease. Hypertension is a very strong risk factor for cardiovascular diseases (CVDs). It is estimated that it increases the risk at least two-fold for CVDs including coronary artery disease (CAD), congestive heart failure (CHF)/stroke (ischaemic and haemorrhagic), renal failure and peripheral arterial disease. If diagnosed early, occurrence of complications can be prevented.

According to the NCD programme several regional small surveys in the last two decades with varying protocols have reported a prevalence which varies from 6.15% to 36.36% in men and 2% to 39.4% in women in urban areas and from 3% to 36% in men and 5.80% to 37.2% in women in rural areas. The prevalence of hypertension increases with growing age and it is estimated that starting from around 15% to 20% in the early age it increases to 75% to 80% in individuals above 70 years of age. According to World Health Organization (WHO) global health report 2009, HTN is leading cause for mortality (responsible for 13% of death globally).

Target organ damage assessment in hypertension is a better predictor of cardiovascular risk in hypertensive patients. It has also significant prognostic significance. Adequate treatment of hypertension can reverse and prevent the progression of target end organ damage. Newly detected hypertensive patients can have evidence of target organ damage at the time of diagnosis of the disease. Based on that progression of complications of the disease can be predicted. It also helps in early treatment of target end organ damage.

This study focuses on the target end organ damage in 150 newly detected hypertensive patients attending NCD outpatient and inpatient department at tertiary care hospital for a period of nine months.

AIMS AND OBJECTIVES

- To assess the prevalence of target end organ damage in newly detected hypertensive patients
- To analyse the severity of hypertension at the time of diagnosis based on target organ damage

MATERIAL AND METHODS:

Study Design: Prospective Study

Study Setting: Medicine department of a Tertiary Care Hospital.

Study Population: 150 IPD Patients of attending Tertiary Care Hospital, who fulfil the following criteria for study.

Sampling Method: A consecutive sampling method was used till desired sample size was achieved.

Ethical Clearance: Ethical clearance was obtained from institutional ethics committee.

Inclusion Criteria

Patients in the age group of > 18 years attending General Medicine OPD and IPD in Tertiary Care Hospital newly detected as hypertensive patients

Exclusion Criteria

- Known hypertensive patients
- Age less than < 18
- Patients with previous history of Coronary artery disease, cerebrovascular accident, diabetes mellitus, visual disturbances, renal failure, peripheral arterial occlusive disease
- All antepartum and post partum patients will be excluded from this study and imbalancing homeostasis resulting in false data recording.

Research Methodology specified for Data collection

The patients fulfilling to the inclusion criteria were enrolled into the study after being explained the proceedings of the study and after they signed the consent form.

BP of all patients was measured with dial sphygmomanometers, without coffee or tobacco consumption at least half hour before the procedure, after resting for 5–10 min, in a sitting position and having the arm supported at the level of the heart. Three consecutive measurements will be performed and the mean BP will be determined.

The target organs examined are as follows:

1. Retina (eye) – fundus examination with the help of ophthalmoscope.
2. Kidney – spot urine examination for the presence of urine albumin range of protein.

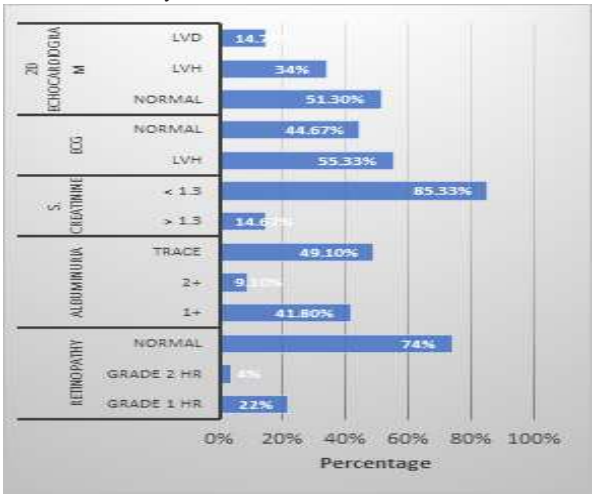
3. Heart – examination with the help of electrocardiogram (ECG) and echocardiography.

Statistical Analysis

The collected data was entered in Microsoft excel. The categorical variables were presents as number and percentage whereas for continuous variable were presented as mean and SD. Chi square test $\chi 2$ and Unpaired 't' test were used as test of significance. p value of <0.05 was considered statistically significant.

RESULTS AND OBSERVATION:

- Hypertension is estimated to be the leading cause of current global disease burden and is prevalent in many developing countries, as in the developed world. Hypertension induced complication occur to all systems of body like cardio vascular, nervous system kidneys, retina etc.
- In our study of 150 patients, there were 102 males and 48 females. In this study, the most common presentation was headache 60% where study done 5% were asymptomatic, 52 %, breathlessness was common in 55%, and giddiness was presents in 40%.
- In our study, 13 (8%) patients had family history of hypertension. Other study had shown family history of hypertension as an important determinant of hypertension (35).
- Out of the study population, 76.67% were having SBP in stage 2 (SBP >139 mmHg) and 80.67% had DBP in stage 2 with BP >90 mmHg at the time of diagnosis. The study included 68% males and 32% females. There is no significant difference in BP between both sexes based on stage of hypertension.
- Assessment of end organ damage include hypertensive retinopathy in the form fundus examination, ECG and 2D-echocardiography to look for LVH based on Sokolov-Lyon index and urine albumin by dip-stick method and Serum creatinine to look for renal dysfunction.



Graph: Target Organ Damage

Table 1 - Number Of End Organ Damage

No. Of Organ Damage	Number Of Patients	Percentage
0	36	24
1	34	22.7
2	58	38.7
3	22	14.6

Table 2 - Distribution Of Total And Organ Damage

Total End Organ Damage	Response No.	Percentage
LVH	83	55.3
RWMA/ LVD	22	14.7
HTR	39	26
Raised creatinine	32	21.3
Proteinuria	55	36.7
CVA	4	2.7

DISCUSSION:

Retinopathy

- It is observed that 26% had evidence of hypertensive retinopathy out of which 22% had grade 1 and 4% had grade 2 hypertensive retinopathy. Grade 3 and grade 4 retinopathy were not seen in any patient. Schmieder RE. et al showed that 1% patients having hypertension have malignant hypertension and it has 3 year survival rate of 6%. There was statistically significant correlation between stage of SBP and presence of hypertensive retinopathy with p value. This indicates that higher the SBP there are more chance with severity of hypertensive retinopathy based on Chi square test and Kruskal-Wallis test.
- Grosso et al concluded that cardiovascular evaluation should be done in the presence of micro vascular changes in the retina. There was also statistically significant correlation between mean SBP and hypertensive retinopathy. There was also statistically significant correlation between mean DBP and hypertensive retinopathy. As the stage of hypertension progresses, the hypertensive retinopathy also progresses. This was statistically significant based on ANOVA test. Our study shows that there is correlation between BP recorded at the time of diagnosis and presence of hypertensive retinopathy for both systolic and diastolic blood pressure.

Nephropathy

- Roland E Schmieder41 showed that as stage of hypertension increases there is very significantly elevated risk of clinically manifest cardiovascular and renal disease. Addo et al showed that a mean SBP and DBP were high if there is any organ damage compared to those without damage. In our study 36.67% of newly detected hypertensives had albuminuria and 41.8% had 1+ proteinuria and 9.1% had 2+ proteinuria. Patients with stage 2 hypertension had more prevalence of albuminuria and it was statistically significant. Also the amount of albuminuria depends on mean systolic blood pressure. As mean SBP is more, albuminuria is more. It was statistically significant with p value <0.05. Amount of albuminuria also corresponds to DBP. As DBP is more, risk of albuminuria is more. Yao Ping Lin showed that albuminuria and eGFR<60 ml/min is associated with increased all cause and cardiovascular mortality.
- 14.67% of the patients have serum creatinine more than 1.3mg%. But the stage of hypertension had no correlation with serum creatinine levels. Also no significant correlation with serum creatinine levels. Also no significant correlation between mean SBP and DBP and serum creatinine.

ECG And Echocardiography

- 55% had ECG changes of LVH according to Sokolov Lyon index. There was significant correlation between ECG and stage of hypertension with SBP, DBP and mean SBP and DBP. Systolic BP is an independent strong predictor of risk of cardiovascular and renal disease. He J. et al showed that isolated systolic BP is the commonest type of hypertension in geriatric age group. LVH is the most common complication of hypertension in these patients.
- 34% had ECG changes of LVH in 2d echocardiogram study. There was significant correlation between echocardiography findings and stage of hypertension with SBP, DBP and mean SBP and DBP. Systolic BP is an independent strong predictor of risk of cardiovascular and renal disease. He J. et al showed that isolated systolic BP is the commonest type of hypertension in geriatric age group. LVH is the most common complication of hypertension in these patients.

TOD analysis

34 patients had at least one end organ damage which is 22.7% and 36 patients did not have any organ damage which is 24%. There is 38.7% patients with evidence of two end organ damage out of three screened for. And 14.6% had all three end organ damage with retinopathy, nephropathy and hypertensive heart disease.

CONCLUSION:

- Hypertension is a silent killer disease and is on a raising trend in the current era. It has become the most common cause of cardiovascular events contributing to morbidity and mortality.
- In conclusion, presence of TOD in our study patients on their first arrival at the hospital indicates unawareness among the general population.
- In this study, as the magnitude of blood pressure is higher at the time of diagnosis, there are chance of presence of end organ damage.

The presence of signs of organ damage confers an increased cardiovascular risk to any level of blood pressure. This signifies the importance of evaluating for all the end organ damage at the time of diagnosis of the disease. This reduces risk of morbidity and mortality

and prevention of complications.

REFERENCES:

1 Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension 2003;42:1206-52.

2 Rafey M. Beyond office sphygmomanometry: Ways to better assess blood pressure. Cleve Clin J Med 2009;76:657-62.

3 Wolf Maier K, Cooper RS, Kramer H, Banegas JR, Giampaoli S, Joffres MR, et al. Hypertension treatment and control in 5 European countries, Canada and the United States. Hypertension 2004;43:10-7.

4 Meenakshisundaram R, Sweni S, Dhanalakshmi G, Sridevi R, Thirumalaikolundusubramanian P. Knowledge attitude, behaviour and practice of interns towards errors in sphygmomanometer and blood pressure measurements. J Clin Hypertens (Greenwich) 2009;11:748-52

5 Carretero OA, Oparil S. Essential hypertension. Part I: Definition and etiology. Circulation 2000;101:329-35.

6 Mancia G. Blood Pressure Reduction and Cardiovascular Outcomes: Past, Present, and Future. American Journal of Cardiology 2007; 100(3A):4-9J.

7 The Edward D. Freis Papers. Early Career and Work with Antihypertensive Drugs, 1940-1949.

8 Yoon SS, Burt V, Louis T, Carroll MD. Hypertension among adults in the United States, 2009-2010. NCHS Data Brief. 2012(107):1-8.

9 Yoon P, Gillespie C, George M, Wall H. Control of Hypertension among Adults — National Health and Nutrition Examination Survey, United States, 2005-2008. June 15, 2012 / 61(02);19-25.

10 Farley TA, Dalal MA, Mostashari F, Frieden TR. Deaths preventable in the U.S. by improvements in use of clinical preventive services. Am J Prev Med 38(6):600-9. 2010.