

To study & analyse the clinical profile of hypertensive patients at the time of diagnosis, in a tertiary care hospital.

¹Dr. Gargi N. Rathod, Medical Officer in COVID care, Shri M. P. Shah Government Medical College & Guru Gobind singh Government Hospital, Jamnagar. Gujarat. India.

²Dr. Bhupendra I. Goswami, Professor Add of Medicine, Shri M. P. Shah Government Medical College & Guru Gobind singh Government Hospital, Jamnagar. Gujarat. India.

³Dr. Manish N. Mehta, Head of Medicine Department, Shri M. P. Shah Government Medical College & Guru Gobind singh Government Hospital, Jamnagar. Gujarat. India.

Corresponding Author: Dr. Gargi N. Rathod, Medical Officer in COVID care, Shri M. P. Shah Government Medical College & Guru Gobind singh Government Hospital, Jamnagar. Gujarat. India.

How to citation this article: Dr. Gargi N. Rathod, Dr. Bhupendra I. Goswami, Dr. Manish N. Mehta, “To study & analyse the clinical profile of hypertensive patients at the time of diagnosis, in a tertiary care hospital”, IJMACR- March - 2023, Volume – 6, Issue - 2, P. No. 661 – 666.

Open Access Article: © 2023, Dr. Gargi N. Rathod, et al. This is an open access journal and article distributed under the terms of the creative commons attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Hypertension is a silent killer disease. Hyper tension is a very strong risk factor for cardio vascular 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 (ischemic and Haemorrhagic), renal failure and peripheral arterial disease. If diagnosed early, occurrence of complications can be prevented.

Aim: 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: OPD and IPD Patients of newly diagnosed hyper tension, attending tertiary government hospital, which fulfil the criteria for the study were enrolled.

Result and observations: In our study we found that out of all patients with total end organ damage, 70% had CVS complications, 26% had hypertensive retinopathy, 58% had raised creatinine and proteinuria and 2.7% had CVA complications. Among CVS complications CAD was found in 44 (29%) patients, out of them 7 had CCF (4.5%). LVH was the commonest ECG manifestation. 14.7% patients had ECHO evidence of Left Ventricular Diastolic Dysfunction.

Discussion: This study shows 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.

Keywords: Hypertension, BP, WHO.

Introduction

Hypertension (HTN) is a long-standing medical condition in which the blood pressure (BP) within 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.¹

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.¹

Furthermore, awareness, treatment, and control of HTN and also techniques available for measurement of BP among healthcare professionals remain suboptimal.^{1,2}

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 (ischemic 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 mortality³ (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 treatment³ 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 government hospital for a period of nine months.

Aim

- 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

Source of study

Data consists of primary data will be collected by the principal investigator directly from newly detected hypertensive patients. attending Medicine OPD in tertiary care Hospital.

Study Type: Prospective Study

Period of Study: 09 months

Method of study

A total of 150 patients with newly detected HTN from outpatient and inpatient attending the hospital will be included for this study based on a set of inclusion and exclusion criteria patients consecutively seen. Patients with comorbid illness will be excluded from the study. BP of all patients was measured with dial Sphygmo mano meters, 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 measure ments 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 electro cardio gram (ECG) and echocardiography.

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

Result and observations

Table 1: comparison of stage of sbp with mean Bmi

Systolic bp	Bmi	
	MEAN	SD
Stage i ht	26.15	4.71
Stage ii ht	28.62	3.86
Unpaired t test		
P value - 0.002		
Significant		

Table 2: comparison of stage of dbp with mean Bmi

Diastolic bp	Bmi	
	Mean	Sd
Stage i ht	25.62	4.11
Stage ii ht	28.63	4.01
Unpaired t test		
P value - 0.0004		
Significant		

Table 3: hypertensive retinopathy distribution

Fundal changes	No of patients	Percentage
Present	39	26.00
Absent	111	74.00

Table 4: Grades of retinopathy

Fundal changes	No of patients	Percentage
Grade 1 hr	33	22.00
Grade 2 hr	6	4.00
Normal	111	74.00

Table 5: comparison of stage of sbp with htn retinopathy

Fundus – hr	Systolic bp	
	Stage i ht	Stage ii ht
Present	2	37
Absnet	33	78
Chi square test		
P value - 0.001		
Significant		

Table 6: comparison of stage of sbp with grade of hyper tensive retinopathy

Fundus	Systolic bp	
	Stage i ht	Stage ii ht
Grade i hr	2	0
Grade ii hr	6	0
Normal	33	78
Kruskal wallis test		
P value - 0.001		
Significant		

Table 7: Distribution of albuminuria

Albuminuria	No of patients	Percentage
Present	55	36.67%
Absent	95	63.33%

Table 8: Serum creatinine distribution

Serum creatinine	No of patients	Percentage
> 1.3	22	14.67
≤ 1.3	128	85.33

Table 9: Comparison of mean dbp with serum creatinine

Creatinine	Diastolic bp	
	Mean	Sd
> 1.3	98.09	11.55 - 22
≤ 1.3	98.36	12.37 - 128
Unpaired t test		
P value 0.924		
Non-significant		

Table 10: Comparison of stage of sbp with ecg

Ecg	Systolic bp	
	Stage i ht	Stage ii ht
Lvh	4	79
Normal	31	36
Chi square test		
P value<0.00001		
Significant		

Table 11: Comparison of stage of dbp with 2d echo cardio graphy

Ecg	Diastolic bp	
	Stage i ht	Stage ii ht
Normal	22	55
Lvh / lvd	7	66
Chi square test		
P value 0.003		
Significant		

Table 12: Distribution of total and organ damage

Total end organ damage	Resposenseno.	Percentage
LVH	83	55.3
RWMA/ LVD	22	14.7
HTR	39	26
Raised creatinine	32	21.3
Protenuria	55	36.7
CVA	4	2.7

In our study we found that out of all patients with total end organ damage, 70% had CVS complications, 26% had hypertensive retinopathy, 58% had raised creatinine and proteinuria and 2.7% had CVA complications. Among CVS complications CAD was found in 44 (29%) patients, out of them 7 had CCF (4.5%). LVH was the commonest ECG mani festation. 14.7% patients had ECHO evidence of Left Ventricular Diastolic Dys function.

Discussion

Hyper tension 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 hyper tension. Other study had shown family history of hyper tension as an important determinant of hyper tension¹ (35).

In this study, 82.67% of patients were more than 40 years and remaining 17.33% were less than 40 years.

24% were more than 60 years. Of which the elderly had more elevated systolic BP than younger age group. This is concurrent with other studies, Kyada P. et al¹ has showed that isolated systolic hypertension is common in elderly (>60 years).

Out of the study population, 76.67% were having SBP in stage 2 (SBP >139 mmHg) at the time of diagnosis. 80.67% had DBP in stage 2 with BP >90 mmHg. The study included 68% males and 32% females. There is no significant difference in BP between both sexes based on stage of hypertension. When considering the BMI of these patients 74.67% had BMI more than 25 and there was significant correlation between stage of hypertension and BMI in both systolic and diastolic blood pressure.

Assessment of end organ damage include hypertensive retinopathy in the form fundus examination, ECG and 2D-echo cardio graphy to look for LVH based on Sokolov-Lyon index and urine albumin and serum creatinine to look for renal dysfunction.

Retinopathy

26% had evidence of hypertensive retinopathy out of which 4% had grade 2 hypertensive retinopathy. Grade 3 and grade 4 retinopathy were not seen any patient. Schmieder RE. et al^{3,4} 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 higher the SBP more chance of hypertensive retinopathy based on Chi square test and Kruskal-Wallis test).

Grosso et al^{5,6} 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 and as DBP is higher more chance of 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 Schmieder⁷ showed that as stage of hypertension increases there is very significantly elevated risk of clinically manifest cardiovascular and renal disease. Addo et al⁸ 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. Yao Ping Lin⁹ 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 al¹⁰ 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 al¹⁰ 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.

References

1. Chobani an 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. Shirafkan A et al. Association between left ventricular hypertrophy with retinopathy and renal dysfunction in patients with essential hypertension. *Singapore Med J* 2009; 50 (1):1177.
5. Williams PR. Will gene markers predict hypertension? *Hypertension* 1989; 14:610-5.
6. Prakash Kumar Kyada, Kunal Jadhav, T.K. Biswas, Varshil Mehta, Clinical study of hypertension in elderly with special reference to risk factors and end organ damage, *Int J Medicine and Allied Health Sciences*, 2014; 4: 372-375
7. Schmieder RE. End organ damage in hypertension. *Dtsch Arztebl Int.* 2010 Dec; 107 (49): 866-73. doi: 10.3238/Arztebl.2010.0866. Epub 2010 Dec 10. PMID: 2119 1547; PMCID: PMC3011179.
8. Grosso A, Veglio F, Porta M, et al Hypertensive retinopathy revisited: some answers, more questions *British Journal of Ophthalmology* 2005;89:1646-1654.
9. Addo J, Smeeth L, Leon DA (2009) Hypertensive Target Organ Damage in Ghanaian Civil Servants with Hypertension. *PLoS ONE* 4(8): e6672. doi: 10.1371/journal.pone.0006672
10. Jianfeng Huang, Rachel P. Wildman, Dongfeng Gu, Paul Muntner, Shaoyong Su, Jiang He, Prevalence of isolated systolic and isolated diastolic hypertension subtypes in China, *American Journal of Hypertension*, Volume 17, Issue 10, October 2004, Pages 955-962.