



CLINICAL STUDY OF HYPERTENSION WITH OTHER COMORBIDITIES IN INDOOR PATIENTS AT TERTIARY CARE CENTRE

Medicine

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ABSTRACT

Introduction: Hypertension is one of the leading causes of the global burden of disease (7.5 million deaths worldwide making 12.8% of total deaths).¹ Hypertension doubles the risk of cardiovascular diseases including CHF & CAD, stroke, renal failure, peripheral arterial disease. It is often associated with additional risk factors & comorbidities which again increases total burden of diseases.²

Aim: Our aim was to study association of vascular complications in patients with hypertension alone and hypertension along with other comorbidities & their overall impact on various disease outcomes.

Materials and to Methodology: This study was conducted retrospectively enrolling 225 essential hypertensive patients, admitted in medical ward irrespective of their initial presentation as well as final diagnosis in our institute during January 2016 to June 2017. The exclusion criteria include patients with secondary hypertension & pregnant females.

Results and Discussion: Out of 225 patients with hypertension, 134 patients were having hypertension along with one or more comorbidities. In this group, 43.9% of patients presented with CV stroke, 23.1% of patients presented with LVF & IHD, 14.8% of patients with renal involvement & 8.2% of patients with acute gastroenteritis & infectious disorders.

Conclusion: In this study, Hypertensive patients with comorbidities like diabetes, Ischemic heart disease and chronic kidney disease were having more incidences of all types of vascular complications as compared to patients having hypertension alone. So, earlier identification of comorbidities and their aggressive control is the most important part of the management of hypertension.

Group A defines patients with hypertension without any comorbidity.

Group B defines patients with hypertension along with one or more comorbidity.

KEYWORDS

HTN-Hypertension, CHF- Congestive heart failure, CAD-Coronary artery disease, CV stroke- Cardiovascular stroke, IHD- Ischemic heart disease, DM-Diabetes mellitus, CKD-Chronic kidney disease, COPD-Chronic obstructive pulmonary disease, AKI-Acute kidney injury, AKI ON CKD-Acute kidney injury over chronic kidney disease.

Introduction

Globally cardiovascular disease accounts for approximately 17 million deaths a year, nearly one third of the total. Of these, complications of hypertension account for 9.4 million deaths worldwide every year. Hypertension is responsible for at least 45% of deaths due to heart disease, and 51% of deaths due to stroke.³ Out of all, nearly two third of patients live in developing countries resulting in huge economic burden". India is a global capital of hypertension.

Hypertension leads to atherosclerotic CAD & micro vascular disease leading to end organ damage. Every 20 mmHg increase in systolic & 10 mmHg increase in diastolic pressure doubles the cardiovascular risk.⁴

Insulin resistance leads to unfavorable imbalance of endothelial mediators exaggerating atherosclerosis.

Renal disorders can be the target as well as cause of hypertension affecting preglomerular arterioles, glomeruli & postglomerular structures.

So, chance of developing vascular complications increases significantly among patients with multiple comorbidities as compared to patients with hypertension alone.

Aim

Our aim was to study association of vascular complications in patients with hypertension alone and hypertension along with other comorbidities & their overall impact on various disease outcomes.

Materials and Methodology

This study was conducted retrospectively enrolling 225 essential hypertensive patients, admitted in medical ward irrespective of their initial presentation as well as final diagnosis in our institute during 16 months of study from January 2016 to June 2017. All known hypertensive as well as newly detected hypertensive patients were

included in our study as per JNC 7 hypertension guidelines. In our study we have classified all patients as per their final diagnosis but we have not taken into consideration their etiopathogenesis as it is not of our clinical interest. The exclusion criteria include patients with secondary hypertension & pregnant females.

Results & Discussion:

(1) Gender distribution

Gender	Total No. of patients	Male	Female
Number of patients	225	119(52.8%)	106(47.1%)

Overall 225 patients were included in our study out of which 52.8% (n=119) were male patients while 47.1% (n=106) were female patients.

(2) Age distribution

Age groups	Number of patients	Male	Female
11-20	1	0	1
21-30	5	1	4
31-40	19	14	5
41-50	49	29	20
51-60	61	32	29
61-70	64	33	31
71-80	16	4	12
81-90	9	6	3
96 Years old	1	0	1
Total No. of patients	225	119	106

Maximum numbers of patients were in age group from 41 to 70 years (making 77.3%) youngest patient was 17 years old diagnosed with young stroke while oldest patient was 96 years old diagnosed with LVF & IHD.

(3) Family history of Hypertension :

Present	61(27.1%)
Absent	164(72.8%)

Family history was present in 27.1% (n= 61) patients while it was absent in 72.8% (n=164) patients.

(4) HTN with other comorbidities :

Total No. of Patients : 225							
HTN only	HTN with one or more comorbidities						
91	134						
	DM	IHD	CKD	DM +IHD	DM + CKD	DM +CKD +IHD	Others
	36 (26.8%)	40 (29.85%)	20 (14.9%)	18 (13.4%)	7 (5.2%)	3 (2.23%)	10 (7.4%)

In our study, 40% (n=91) patients were having hypertension alone while 60% (n=134) patients were having additional comorbidities.

On further analyzing 134 patients, 26.8% (n=36) of patients were having DM,29.85% (n=40) of patients were having IHD,14.9% (n=20) of patients were having CKD,13.4% (n=18) of patients were having DM with IHD, 5.2% (n=7) of patients were having DM with CKD,2.23% (n=3)of patients were having all 3 comorbidities while 7.4% (n=10) of patients were having other comorbidities like Asthma, Epilepsy etc.

(5) HTN with Addiction :

(A) No. of Patients with addiction:

Total No. of patients(n=225)	
Without addiction	With addiction
124(55.11%)	101(44.88%)

In our study, out of all 225 patients, 55.11% (n=124) of patients were not having any addiction while 44.88% (n=101) of patients were having one or more addiction (alcohol/Smoking/Both).

No. of Patients with addiction (n=101)	
Male	Female
94(78.9%)	7(6.7%)

Total 101 patients were having addiction out of them 78.9% (n=94) of male patients & 6.7% (n=7) of female patients were having addiction.

(B) Type of Substance Abuse:

Type of Substance	No. of patients with addiction(n=101)
Abuse	27(26.7%)
Alcohol	62(61.38%)
Smoking	12(11.18%)
Alcohol & Smoking	

Out of all patients with addiction (n=101), 61.38% (n=62) of patients were having addiction of smoking making it most commonly used substance of abuse followed by 26.7% (n=27) of patients with alcohol & 11.18% (n=12) of patients with alcohol & smoking both.

(C) Disease distribution among Hypertensive patients (with no comorbidities) in Relation to their Addiction:

Systems involved	No of patients with HTN without any comorbidities(n=91)	
	HTN without addiction (n=51)	HTN with any addiction (n=40)
CVA	11(21.56%)	24(60%)
IHD/LVF	3(5.8%)	6(15%)
Renal	3(5.8%)	4(10%)
Gastroenteritis	9(17.6%)	2(5%)
Infections	12(23.5%)	1(2.5%)
Others	13(25.4%)	3(7.5%)

Others include Epilepsy, Accelerated HTN, Arrhythmias, and Asthma etc.

In our study out of all patients, 91 patients were having hypertension alone without any comorbidities in which 56.04% (n=51) of patients were having no addiction while 43.9% (n=40) of patients were having any type of addiction.

Incidence of CVA in patients with addiction were 60% (n=24) which was very high as compared to 21.56% (n=11) from those without

addiction. Incidence of IHD/LVF were 15% (n=6) & incidence of renal involvement were 10% (n=4) in patients with addiction as compared to equal values of 5.8% (n=3) in patients without addiction.

Incidence of gastroenteritis, infections & all other disorders were high in patients without addiction making 66.5% (n=34) as compared to 15% (n=6) from those with addiction.

(6) Disease distribution among patients with HTN only & HTN with other comorbidities.

Systems involved	Disease	Total No. of patients (n=225)	HTN (n=91) Group A	HTN with one or more comorbidities (n=134) Group B	
CNS (n=113)	Vascular	Ischemic CVA	50	18(19.7%)	32(23.8%)
		Hemorrhagic CVA	44	17(18.6%)	27(20.14%)
		TIA	4	1(1.09%)	3(2.23%)
	Non vascular	Bell's palsy	4	3(3.2%)	1(0.7%)
		Epilepsy	6	3(3.2%)	3(2.23%)
		Meningitis	5	4(4.39%)	1(0.7%)
CVS (n=50)	LVF	22	4(4.39%)	18(13.4%)	
	IHD	18	5(5.49%)	13(9.7%)	
	Accelerated HTN	6	2(2.19%)	4(2.98%)	
	Arrhythmia	4	3(3.2%)	1(0.7%)	
Renal (n=27)	AKI ON CKD	8	2(2.1%)	6(4.47%)	
	CKD	10	2(2.1%)	8(5.9%)	
	AKI	9	3(3.2%)	6(4.47%)	
Others (n=35)	Gastroenteritis	17	11(12.08%)	6(4.47%)	
	Infections	18	13(14.2%)	5(3.73%)	

In our study, out of 134 patients from group B; 23.8% (n=32) of patients were having ischemic cerebrovascular accidents(CVA) while it was only 19.7% (n=18) from group A. Incidence of hemorrhagic CVA was found to be 20.14% (n=27) in group B as compared to 18.6% (n=17) in group A. Incidence of Transient ischemic attack(TIA) from Group A was 1.09% (n=1) as compared to 2.23% (n=3) from group B.

Nonvascular complications like Bell's palsy, Meningitis & Epilepsy were higher in group A making total 10.7% (n=10) of patients compared to 3.63% (n=5) of patients in group B.

In Cardiovascular system(CVS) involvement,13.4% (n=18) of patients from group B were having Left ventricular failure while it was only 4.39% (n=4) from group A. Incidence of ischemic heart disease(IHD) was found to be 9.7% (n=13) in group B as compared to 5.49% (n=5) from group A. Incidence of accelerated HTN in group B was 2.98% (n=4) which was slightly higher as compared to 2.19% (n=2) from group A. Cases with arrhythmia were higher in group A with 3.2% (n=3) as compared to group B with 0.7% (n=1).

Renal involvement was significantly higher in group B making 4.47% (n=6) with AKI ON CKD; 5.9% (n=8) with CKD & 4.47% (n=6) with AKI as compared to Group A having 2.21% (n=2) with AKI ON CKD; 2.21% (n=2) with CKD & 3.2% (n=3) with AKI.

Incidence of gastroenteritis & infections both were significantly higher in Group A making 12.08% (n=11) & 14.2% (n=13) of patients respectively as compared to group B having 4.47% (n=6) of patients with gastroenteritis while 3.73% (n=5) of patients with infections.

Conclusion:

- In present study, we have analyzed 225 patients & data was analyzed in reference to its association with other comorbidities & association with addictions.
- Out of all, 50.2% of patients were having neurological complications making maximum number of patients followed by 22.2% of patients with cardiovascular complications & 12% of patients with renal involvement.
- Vascular complications of CNS increases as comorbidities increase while nonvascular complications of CNS were higher in patients with minimum or no comorbidities.
- Cardiovascular & Renal complications both rise significantly in patients with multiple comorbidities.
- Nonvascular complications may remain high in patients with hypertension with no other comorbidities.

- These results indicate that as comorbidities increase, chances of developing end organ damage will also increase.
- Among hypertensive patients, incidences of all vascular complications were higher in patients with any type of addiction (alcohol/smoking/both) as compared to patients having no addiction. These indicate that alcohol/smoking exaggerates the atherosclerotic process leading to increased vascular complications.

Recommendations:

- Identification of comorbidities and aggressive control of such factors are the most important step in the management of hypertension.
- Screening and intervention program should be implemented early at the diagnostic stage and they should be treated aggressively to reduce the cerebrovascular, cardiovascular & renal complications to that we can reduce overall morbidity & mortality related to hypertension.
- De-addiction programs & lifestyle changes with behavioral modification should be strongly advised & encouraged especially in patients with hypertension.

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