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Prevalence and Pattern of Hypertension in Diabetic Patients in Tertiary Care Hospital

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Abstract

India presiding the world with largest number of diabetic patients and is often referred to as the diabetes metropolis of the world. Diabetes mellitus (DM) is a quotidian cause of hypertension, frightfully if glycaemic control is poor. The present study was planned to ascertain the prevalence, pattern of diabetic hypertension and also the use of antihypertensive agents. Prospective observational study was perpetrate at Basaveshwara Medical College & Research Center, Chitradurga on 134 diabetic patients and were disguised for hypertension (HTN). The congregated data were analysed by using SPSS software version 19. The work finished with the outcomes of that, the most of the diabetic patients were having comorbid condition of hypertension. Most universal pattern was stage I HTN. Calcium channel blockers were regularly used to treat the condition.

1 Introduction

Diabetes is one of the most prevalent chronic diseases globally, and it is among the top five causes of temporality. India steer the world with the largest number of diabetic patients and is often broached as the diabetes capital of the world. Diabetes Mellitus (DM) is defined as a disparate metabolic disorder gesticulate by a common feature of chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism, which occurs due to insulin deficiency and or resistance that can lead to damage to multiple organs[1]. Many patients with diabetes have had their disease a long time before the diagnosis, by which time many have developed diabetic complications[2].

Diabetes and hypertension habitually occur in sync because there is substantial shingle between them in etiology and disease mechanisms. The prevalence of hypertension among patients with non insulin dependent diabetes mellitus is customarily more herculean to define. Several studies have also urge that, there is 54% increase in the prevalence of hypertension (defined as a blood pressure >160/95 mmHg) in the diabetic patients. The Eighth Report of the Joint National Committee on halt, detection, evaluation, and treatment of high blood pressure (JNC 8) has are notarised a descending shift in target blood pressure to <130/80 mm Hg in diabetic patient[3].

Reasons behind this is mainly due to the occupancy of renal insufficiency in the diabetic patient may impair the ability to excrete water and solutes, thus perpetuating the volume expansion that was induced by hyperglycemia and/or sodium excess. The contribution of the renin-angiotensin-aldosterone system to the hypertension of diabetes is also a main factor[4].

In this backdrop, the study organized to explore the prevalence, pattern of hypertension in diabetes mellitus and frequently prescribing class of drugs in this condition. This which bestowed salutary insight and ameliorate the cardiovascular health, foreshorten morbidity and heighten the excellence of life of the victims.

2 Material and methods

A Prospective observational study was organized as per JNC recommendations after procuring approval from the institutional ethics committee of SJM College of Pharmacy, Chitradurga. The study was registered with reference number REF/no: SJMCP/IEC/05/2016-17. The work possessed several inclusion criteria as follows, diabetic patients of both genders (>18 yrs) and exclusion criteria as patients in psychiatric department, out patients and gestational diabetes.

Data from patients, who had signed informed consent, were collected during their first interaction. All samples were reviewed on the same day. Statistical analysis was fetched out on statistical software SPSS version 19.For each variable mean, standard deviation and ranges were calibrated.

The P values <0.05 were considered significant for comparison of age, gender, diagnosis. All categorical data including socio-demographics of patients were depicted as frequency and percentage. Prevalence of hypertension in diabetic patient was displayed as percentage.

3 Results

After obtaining ethical clearance from Institutional ethical committee, inform consent has to be converged from patients. A total of 134 patients were recruited in the study. The study summarized the distribution of study population according to age group shown in table 1. Geriatic patients of age group 61-70 yrs enclosed highest number of diabetic patients.

The work encapsulated the distribution of study population according to gender is manifested in table 2.

Table 1: Distribution of study population according to age group

Age groups	Frequency (n=134)	Percentage (%)	
Below30 years	7	5.22	
31-40 years	6	4.47	
41-50 years	17	12.68	
51-60 years	36	26.86	
61-70 years	40	29.85	P value = 0.97 (NS)
71-80 years	19	14.17	
More than 80 years	9	6.71	
Total	**134**	**100%**	

Table 2: Distribution of study population according to gender

Genders	Frequency (n=134)	Percentage (%)	
Female	65	48.50	P value = 0.000<0.05(sig)
Male	69	51.49	Mean ± SD = 60.7 ± 14.56
Total	134	100%	

Male patients are more prone for diabetes than female patients. This is because men may be less sensitive to Insulin than women. And at the same time, the smoking, alcohol dependence habituals which will aggravate the situation. Prevalence of hypertension in diabetic study population is demonstrated in table 3. About 63.43% were diagnosed with hypertension from the diabetic population. Pattern of diabetic hypertension in study population is displayed on table 4. Stage I hypertension encompassed the highest number of patients. Prescribing pattern of anti-hypertensive among study population is exhibited on table 5. Calcium channel blockers are the repeatedly prescribed drugs.

4 Discussions

The research reveals creditable erudition about the control rates of dyslipidemia and hypertension in Indian diabetic citizenry. It postulate, the studies provided significant data, taking into cogitation, the scale and nationwide sample pool of convalescent. Our study which enrolled 134 diabetic patients shows that 63.43% had hypertension. The results are comparable to the data from Venugopal K [12] showed a prevalence of 25.6% patients have with diabetic hypertension in a general population.

Considering the surging prevalence and wavering epidemiology of twain diabetes and CVD and the higher fair shake of their coevality in India, this compilation provided important divination on control of combing riff of hypertension in this assailable denizens.

Our study also focused on the pattern of hypertension, and also the drug use.

The most common patterns of hypertension discussed were with stage I hypertension followed by pre hypertension and stage II hypertension, respectively. Whereas in a study done by Venugopal[12] the pattern of hypertension observed was similar to

our study. In our study we additionally found out that stage I hypertension comprised of more number of males and females. And also Pre-hypertension and stage II hypertension were more seen among 61-70 years of age group. Stage -I hypertension was more demonstrated in 51-60 years of age group.

Table 3: Prevalence of hypertension in diabetic patients

Characteristics (n=134)	Total no. of Patients		Patients with Hypertension	
	Frequency	Percent %	Frequency	Percent %
Age (years)				
31 - 40	6	4.47	4	2.98
41 - 50	17	12.68	12	8.9
51 - 60	36	26.86	16	11.94
61 - 70	40	29.85	31	23.13
71 - 80	19	14.17	16	11.94
More than 80	9	6.71	6	1.19
Genders				
Male	69	51.49	44	32.83
Female	65	48.50	41	30.59
Duration of DM				
<2 years	23	17.16	10	7.46
2-5 years	38	28.35	22	16.41
5-10 years	26	19.40	20	14.92
>10 years	47	35.07	33	24.62

While discussing the commonly prescribed class of drug, our study concluded it as calcium channel blocker (52.12%) which is comparable with the study by Dhanaraj E[3] it was 59%.

In our study the second commonly prescribing class was angiotensin receptor blocker (28.72%) which is comparable to the study by Janagan T[7]it was angiotensin receptor blocker (23.80%).

As shown in our study, hypertension in diabetes, is a very critical cardiovascular risk factor which have a high prevalence in General population, but surprisingly only very few diabetic patients were investigated for their blood pressure in past. For this reason, we strongly recommend detailed blood pressure checking to be done for each and every diabetic patient at the time of diagnosis and regularly on follow-up.

5 Conclusion

Patients of age group 60-70 years and patients with diabetes ≥ 10 years are more demonstrated with diabetic comorbid conditions of hypertension.

Male patients are more affected. Distribution pattern of comorbidities varied in accordance with age and gender. Pre-hypertension and stage II hypertension are more seen among 61-70 years of age group. Stage I

hypertension are more demonstrated among 51-60 years of age group. Males and females are also equally affected with stage I hypertension. Calcium channel blockers are commonly administering an antihypertensive drug.

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7 **Conflict of interest**

Nil

8 Author's contributions

AJ and AS carried out the literature review and draft the manuscript. AJ participated in the data collection and arranged in tabular form. All authors read and approved the final manuscript.

Table 4: Pattern of hypertension in study population

Types	Age groups (in years)	Genders	
		Male (n)	Female (n)
Pre-Hypertension (120-139/80-89) mmHg	31-40	0	0
	41-50	2	1
	51-60	2	2
	61-70	6	2
	71-80	1	4
	More than 80	1	1
Stage-1 Hypertension (140-159/90-99) mmHg	31-40	1	2
	41-50	6	1
	51-60	3	7
	61-70	3	5
	71-80	2	2
	More than 80	1	2
Stage-2 Hypertension (>160/>100) mmHg	31-40	1	2
	41-50	2	1
	51-60	3	1
	61-70	7	1
	71-80	1	2
	More than 80	1	1

Table 5: Prescribing pattern of anti-hypertensive drugs

Class of Antihypertensive	Frequency (n=94)	Percentage
Calcium channel blockers	49	52.12
Beta blockers	2	2.12
ACE inhibitors	12	12.76
ARB	27	28.72
Alpha agonist	2	2.12
Diuretics	2	2.12
Total	94	100%

9 References

1. International Journal of Pharmacotherapy 2017;7(1):1-8.
2. Dhanaraj E, Raval A, Yadav R, Bhansali A, Tiwari1 P. A cross-sectional study involving evaluation of all T2DM patients referred to tertiary care centre for hypertension, comorbid complications, and recording prescription. International Journal of Hypertension. 2012; 10(8): 915-24.
3. Shah A, Afzal M. Prevalence of diabetes and hypertension and association with risk factors in the Muslim populations of Manipur, India. Journal of Diabetes & Metabolic Disorders. 2013; 12(52): 3-10.
4. Janagan T, Kavitha R ,Sridevi T, Veerendra V. Prescription pattern of anti hypertensive drugs used in hypertensive patients with associated type2 diabetes mellitus in a tertiary care hospital. International

Journal of Pharma Research & Review. 2014; 3(1):1-5.

5. Chobanian AV, Bakris GL, Black HR. Eighth Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Hypertension. 2016; 42(12):1206-52.
6. Shah A, Afzal M. Prevalence of diabetes and hypertension and association with risk factors in the Muslim populations of Manipur, India. Journal of Diabetes & Metabolic Disorders. 2013; 12(52): 3-10.
7. Stults B, Robert E, Jones MD. Management of Hypertension in Diabetes: Diabetes Spectrum 2006;19(1):25-31.
8. Basavegowda M, Shankarappa HK, Channabasappa NA, Marulaiah SM, Hathur B.Magnitude and pattern of hypertension among diabetics; risk prediction for stroke and myocardial infarction. Journal of Mahatma Gandhi Institute of Medical Sciences. 2014;19(1): 51-54.
9. American Diabetes Association. Standards of medical care in diabetes: Diabetes Care. 2008; 31(1): 112–54.
10. Diabetes Care. The Journal of Clinical and Applied Research and Education. 2017; 40(1): 211-24.
11. Hussain Z, Sana A, Mohammed S, Razzoq AM. Pattern of drug therapy among diabetic hypertensive patients with other complications. International Journal of Pharmacy and Pharmaceutical Sciences. 2014; 6(6): 0975-91.
12. Venugopal K, Mohammed MZ. Prevalence of hypertension in type II diabetes mellitus.CHRISMED Journal of Health and Research. 2017; 1(4): 223-32.