COMPLIANCE TO ANTIHYPERTENSIVE DRUGS, SALT RESTRICTION, EXERCISE AND CONTROL OF SYSTEMIC HYPERTENSION IN HYPERTENSIVE PATIENTS AT ABBOTTABAD

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Background: Hypertension is one of the most important cardiovascular risk factor but its control is still a challenge for physicians all around the world. Control of blood pressure can reduce cardiovascular morbidity and mortality, so the compliance to antihypertensive drugs and life style modification play an important role for the control of hypertension. This analytical (cross-sectional) study was conducted to assess prevalence of control of hypertension among hypertensive patients and to assess the relationship of control of hypertension with factors like compliance to antihypertensive drugs, salt restriction and exercise among the hypertensive patients. This study was conducted at outpatient clinic of medicine at Shahina Jamil Hospital Abbottabad from April 2007 to September 2007. **Methods:** Eighty-nine patients seen in the outpatient clinic of medicine were enrolled in the study. All the patients with age 15 years or above, diagnosed as a case of systemic hypertension were included. **Results:** Among eighty-nine patients, 67 were female and 22 were male with mean age of 55.8±13.4 years, mean systolic and diastolic blood pressure of 160±28.6 and 97.8±14.1 mm Hg respectively, and pulse rate of 85.9±11.4 per minutes. Out of 89 patients, 25.8% were having controlled hypertension, 48.3% were compliant and 51.7% were not compliant to antihypertensive drugs, 55.1% were having salt restriction and 44.9% were having no salt restriction and 23.6% were used to do physical activity while 76.4% were not used to do physical activity. In group A consisted of patients with controlled hypertension, 95.7% patients were compliant to antihypertensive patients, 95.7% were having salt restriction, and 43.5% were used to do physical activity. In group B consisted of patients with uncontrolled hypertension, only 31.8% were compliant to antihypertensive drugs, 40.9% were having salt restriction, 16.7% were used to do physical activity. **Conclusion:** Hypertension can be controlled if the hypertensive patients have good compliance to antihypertensive drugs, salt restriction and do some sort of physical activity regularly and in this way, prevent themselves from the hypertensive complications.

KEY WORDS: Hypertension, Compliance, Antihypertensive drugs, Salt restriction, Physical activity

INTRODUCTION

Hypertension is considered to be present when a person's systolic blood pressure is consistently 140 mm Hg or more, and/or their diastolic blood pressure is consistently 90 mm Hg or more.[1] Recent 'Global Burden of Hypertension' data showed that more than a quarter of the world's adult population (nearly 1 billion) had hypertension in 2000 and this is expected to increase by about 60% (1.56 billion) in 2025; the population burden being greater in developing countries.[2] In United States, a total of 68.9% of people with hypertension were aware of the diagnosis, 58.4% received treatment, and only in 31.0% the blood pressure was controlled.[3]

According to the National Health Survey of Pakistan, the prevalence rate of hypertension is 18% in the Pakistani population of >15 years of age, with a prevalence rate of hypertension of 16.2% and 21.6% in rural and urban population respectively.[4] The NHSP also showed that among all hypertensive patients in Pakistan, >70% are unaware of their disease.[4] Hypertension is one of the most important cardiovascular risk factor but its control is still a challenge for physicians all around the world.[5] As adequate blood pressure control would reduce cardiovascular morbidity and mortality, so adequate blood pressure control requires good treatment compliance.[6] Non-compliance with prescribed antihypertensive medication is an important contributor to the failure of antihypertensive therapy.[7] Patients reporting strict compliance with prescribed drug therapy have significantly lower systolic blood pressure and diastolic blood pressure than those who admit even an occasional lapse in taking medication.[7] Patients living in cities, currently working, with higher level of education, higher incomes, well defining hypertension and measuring blood pressure regularly were more systematic in drug taking while low incomes were independently associated with irregular drug using.[8] In Pakistan the percentage of controlled hypertension is very low. According to the National Health Survey of Pakistan, 5.5 million men and 5.3 million women suffer from hypertension and only less than 3% have controlled hypertension.[4] This figure shows that non compliance is an important factor leading to such low percentage of controlled hypertension.

In this study, the relationship between compliance to antihypertensive drugs, salt restriction,

physical activity and control of systemic hypertension were assessed in hypertensive patients.

PATIENTS AND METHODS

This study was conducted at the outpatients department of Shahina Jamil Trust Hospital Abbottabad from April 2007 to September 2007.

Patients, who were more than 15 years of age, diagnosed as case of systemic hypertension and were taking antihypertensive medicine, were included in the study. Newly diagnosed hypertensive patients, hypertensive patients who were not on antihypertensive drugs or taking other therapy like homeopathic/hakims, were excluded from the study. Purposive type of sampling was used. Consent was taken from the patients to record the data that include age, sex, residence, systolic blood pressure, diastolic blood pressure, pulse rate, treatment taken or not, compliance to drugs, salt restriction and exercise. All the data of included patients was recorded on pre-designed proforma. Blood pressure was taken as an average of 2 measurements taken after the participants were seated quietly with their backs supported without crossing their legs and with arms supported at heart level for 5 minutes. Blood pressure was measured by a doctor using a standard and regularly tested aneroid sphygmomanometer. Patients were divided into two groups, group A consisted of patients with controlled hypertension and group B consisted of patients with uncontrolled hypertension. Hypertension was defined controlled in those on treatment if the average BP was <140/90 mm Hg in non-diabetic patients. For diabetic participants, hypertension was considered to be controlled if the average BP was <130/80 mm Hg. Similarly hypertension was defined uncontrolled in those on treatment if the average blood pressure was >140/90 mm Hg. Compliant patients were those who did not miss the dose of their antihypertensive drugs during the last three month and non-compliant patients were those who had missed a dose of their antihypertensive drugs during the last three month. Patients not using table salt were considered as having salt restriction and *vice versa*. Patients who were used to do physical activity like walking, jogging or any aerobic exercise for at least >4 days of a week were considered as doing exercise and *vice versa*.

It was analytical (cross-sectional) study. All the data was stored and analyzed by using statistical package for social sciences (SPSS) version 14. Independent-samples T-Test was used to compare the means of variables among two groups of hypertensive patients. Chi-square test was used to compare the parameters of the patients and differences were regarded significant when *p*-value was equal to or <0.05.

RESULTS

Eighty-nine patients with systemic hypertension were included in the study. Table-1 shows the Mean±SD of age, systolic blood pressure, diastolic blood pressure and pulse rate of hypertensive patients while Table-2 shows frequency and percentage of variables of hypertensive patients.

Out of eighty nine hypertensive patients 67 (75.3%) were female and 22 (24.7%) were male with mean age of 55.8±13.4 years, mean systolic BP 160±28.6 mm Hg, mean diastolic BP 97.8±14.1 mm Hg and mean pulse rate 85.9±11.4 per minute. Hypertension was found to be controlled in 23 (25.8%) patients and uncontrolled in 66 (74.2%) patients. Out of eighty-nine patients 43 (48%) were compliant and 46 (51.7%) were not compliant to antihypertensive drugs, 49 (55.1%) were having salt restriction and 40 (44.9%) were not having salt restriction and 21 (23.6%) were use to do physical activity and 68 (76.4%) were not doing any physical activity.

Comparison of different variable between the two groups of hypertensive patients has been shown in tables 3 and 4. Among the two groups of hypertensive patients, mean age of patients in group A consisted of controlled hypertension was 55.1±16.2 years and in group B consisted of uncontrolled hypertension was a 56.1±12.5 years which was not statistically significant as *p*-value was >0.05, mean systolic and diastolic pressure of patients in group A were 126.1±10.2 mm Hg and 83.0±6.2 mm Hg respectively while in group B were 171.8±23.0 mm Hg and 102.9±12.4 mm Hg respectively which were statistically significant as *p*-value was <0.05. Mean pulse rate of patients in group A was 83.1±10.3 per minutes and in group B was 86.9±11.7 per minutes which was not statistically significant as *p*-value was >0.05.

Compliance to antihypertensive drugs in group A and B was 22 (95.7%) and 21 (31.8%) respectively with *p*-value of <0.05, non compliance to antihypertensive drugs in group A and B was 1 (4.3%) and 45 (68.2%) respectively with *p*-value of <0.05, patients having restriction to salt were 22 (95.7%) in group A and 27 (40.9%) in group B with *p*-value of <0.05 and patients who were not having restriction to salt in both groups were 1 (4.3%) and 39 (59.1%) respectively with *p*-value of <0.05. Patients who were used to do physical activity in group A and B were 10 (43.5%) and 11 (16.7%) respectively with *p*-value of <0.05 and those who were not used to do any physical activity in both groups were 13 (56.5%) and 55 (83.7%) respectively with *p*-value of <0.05.

Table-1: Range and Mean±SD of age, systolic and diastolic BP and pulse rate of all hypertensive patients

	Total patients	Mean	SD
Age (year)	89	55.8	13.4
Systolic BP (mm Hg)	89	160.0	28.6
Diastolic BP (mm Hg)	89	97.8	14.1
Pulse rate (per minute)	89	85.9	11.4

Table-2: Frequency and percentage of variables of hypertensive patients

Variable		No.	Percent
Sex	Female	67	75.3%
	Male	22	24.7%
Blood pressure	Controlled	23	25.8%
	Uncontrolled	66	74.2%
Compliance	Compliant	43	48.3%
	Non compliant	46	51.7%
Salt intake	Restriction	49	55.1%
	No restriction	40	44.9%
Physical activity	Doing	21	23.6%
	Not doing	68	76.4%
Total patients		**89**	**100.0%**

Table-3: Comparison of Mean of age, systolic and diastolic BP and pulse rate between two groups of hypertensive patients

	Group	No.	Mean	SD	*p*-value
Age(years)	Group A	23	55.1	16.2	0.77
	Group B	66	56.1	12.5	
Systolic BP	Group A	23	126.1	10.2	0.00
	Group B	66	171.8	23.0	
Diastolic BP	Group A	23	83.0	6.2	0.00
	Group B	66	102.9	12.4	
Pulse rate	Group A	23	83.1	10.3	0.16
	Group B	66	86.9	11.7	

Table-4: comparison of factors affecting the control of hypertension between two groups of hypertensive patients

Factors		Group A (n=23)	Group B (n=66)	Total	*p*-value
Compliance	Compliant	22 (95.7%)	21 (31.8%)	43 (48.3%)	0.000
	Non compliant	1 (4.3%)	45 (68.2%)	46 (51.7%)	0.000
Salt intake	Restriction	22 (95.7%)	27 (40.9%)	49 (55.1%)	0.000
	No restriction	1 (4.3%)	39 (59.1%)	40 (44.9%)	0.000
Physical activity	Doing	10 (43.5%)	11 (16.7%)	21 (23.6%)	0.009
	Not doing	13 (56.5%)	55 (83.3%)	68 (76.4%)	0.009

DISCUSSION

One of the main central focuses of the primary prevention of cardiovascular disease has been increasing awareness and treatment of patients with hypertension. This has had a positive impact on cardiovascular disease prevention in many countries[9–12], especially in the USA where the effort had been greatest[9,10].

In this study, it had been tried to asses the prevalence of controlled hypertension and the impact of factors like compliance, salt restriction and physical activity on the control of hypertension. This study showed that the mean age of all the included hypertensive patients was 55.8±13.4 years. Almas *et al* have done a study on factors affecting the compliance to antihypertensive therapy, found

mean age of 58.1±12 years of hypertensive patients.[13] Over all mean systolic and diastolic B.P was 160±28.6 mm Hg and 97.8±14.1 mm Hg respectively. Sherin *et al* found mean systolic B.P of 163±35.6 mm Hg and mean diastolic BP of 95.97±20.7 mm Hg in their hypertensive patients.[14] Rehman and his colleague have done a study to evaluate cardiovascular risk factors in patients with essential hypertension and found mean systolic blood pressure of 170 mm Hg while mean diastolic blood pressure of 104 mm Hg in their subjects.[15] This study showed that blood pressure was controlled in 25.8% of patients and uncontrolled in 74.2% of patients. In United States, blood pressure control rate was found to be 36.8±2.3% in 2003–2004.[16]

Among all the hypertensive patients, 48.3% were compliant to antihypertensive drugs while 51.7% were not compliant to the drugs. Study done by Almas *et al.* showed that 57% of hypertensive patients were compliant and 43% were non-compliant to antihypertensive therapy.[13] Similarly a study was done on blood pressure control, follow-up and drug compliance among hypertensive patients at Civil Hospital, Karachi by Shaikh NA and found that 54% patients were having good drug compliance.[17] Out of hypertensive patients, 55.1% were having salt restriction and 44.9% were not having salt restriction, and 23.6% were use to do physical activity and 76.4% were not involved in any physical activity. This is correlated with the study done by Ashfaq *et al.* They found in their study that 77% of hypertensive patient attending OPD of a tertiary care hospital at Karachi were not doing exercise.[18]

When compliance to antihypertensive drugs, salt restriction and to do exercise were assessed in both groups of patients with controlled hypertension and uncontrolled hypertension, it was found the control of hypertension is significantly associated with these factors as the *p*-value was 0.00.

CONCLUSION

It is concluded from this study that if the hypertensive patients take their medicine regularly, avoid table salt and do some sort of physical activity then they can have their hypertension controlled and can prevent themselves from complications that can result from uncontrolled hypertension.

It is recommended that hypertensive patients should be counselled every time whenever they visit to physician to improve the compliance to anti hypertensive drugs, salt restriction and to do exercise daily, so that they should have better control of hypertension.

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