

Research Article

Analysis of oral antihypertensive medication in blood pressure elevation and their outcomes in Pakistani environment: A therapeutic approach

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ABSTRACT

Introduction: Hypertensive emergencies encompass a spectrum of clinical presentations in which uncontrolled blood pressures (BPs) lead to progressive or impending end-organ dysfunction. In these conditions, the BP should be lowered aggressively over minutes to hours.

Objectives of the study: The main objective of the study is to find the effect of oral antihypertensive medication in blood pressure elevation and their outcomes in Pakistani environment. This is basically a therapeutic approach.

Methodology of the study: This study was conducted at Nishtar Hospital, Multan, Pakistan during 2017. The data was collected from 100 patients which was suffering from high blood pressure use any kind of oral medication for treatment. We collect the data in two sections, as first of all we collect some demographic information regarding age, sex, socio-economic status and history of blood pressure. Then in second part we collect data regarding high blood pressure, use of medication and heart issues. For this purpose we prepare a questionnaire and fill that from patients.

Results: Despite the lack of evidence of an immediate increase in risk of major adverse cardiovascular events, primary care physicians often are hesitant to send patients with severe blood pressure elevations home. As a result, it remains common practice to acutely lower blood pressure using short-acting antihypertensive.

Conclusion: In conclusion, in patients without previous hypertension, oral antihypertensive therapy can be initiated during the hospitalization with close outpatient follow-up.

Keywords: Oral, medication, hypertensive, blood pressure.

INTRODUCTION

Hypertensive emergencies encompass a spectrum of clinical presentations in which uncontrolled blood pressures (BPs) lead to progressive or impending end-organ dysfunction. In these conditions, the BP should be lowered aggressively over minutes to hours. Neurologic end-organ damage due to uncontrolled BP may include hypertensive encephalopathy, cerebral vascular accident/cerebral infarction, subarachnoid hemorrhage, and/or intracranial hemorrhage. Cardiovascular end-organ damage may include myocardial ischemia/infarction, acute left ventricular dysfunction, acute pulmonary edema, and/or aortic dissection¹.

Hypertension is a significant public health problem, with a worldwide prevalence of 40.8% and a control rate of 32.3. Hypertension is a noteworthy hazard factor for various genuine health conditions, including cardiovascular ailment, cerebrovascular malady, and constant kidney illness². Worldwide, 9.4 million passing are credited to difficulties from hypertension, including 45% of all passing because of coronary vein illness and 51% of all passing because of stroke². These relations are steady in the two people, in youthful, moderately aged, and more seasoned subjects, among different racial and ethnic gatherings, and inside and between nations.

In spite of the fact that there is a continuum of cardiovascular hazard crosswise over levels of circulatory strain, the characterization of grown-ups as indicated by pulse gives a system to differentiating levels of hazard related with different circulatory strain classes and for characterizing treatment edges and helpful objectives³.

As per the grouping approaches created by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VI) and the World Health Organization and the International Society of Hypertension (WHO-ISH)⁴, non-hypertensive subjects with a systolic weight of 130 to 139 mm Hg or a diastolic weight of 85 to 89 mm Hg are sorted as having high-ordinary pulse⁵. Despite the fact that subjects with high-ordinary circulatory strain are probably going to have a hoisted danger of cardiovascular infection (given the continuum of hazard), there is a scarcity of data in regards to the supreme and relative dangers of cardiovascular ailment in these people⁶. In spite of the fact that information on deadly coronary occasions and strokes in people with high-typical circulatory strain are accessible, data on the danger of nonfatal cardiovascular occasions among individuals in this pulse class is restricted. We attempted a planned examination of the danger of cardiovascular sickness in people with high-typical pulse⁷.

BACKGROUND OF THE STUDY

Elevated blood pressure (BP) is a causal risk factor for cardiovascular disease (CVD). Severe asymptomatic hypertension most often occurs in patients previously diagnosed with hypertension. More than 60% of patients have persistent uncontrolled hypertension six months after a documented clinic visit with a systolic blood pressure of 180 mm Hg or more, or a diastolic blood pressure of 110 mm Hg or more.⁸ Medication noncompliance has been reported in up to 65% of patients prescribed antihypertensive medications and is a major cause of severe asymptomatic hypertension⁷.

OBJECTIVES OF THE STUDY

The main objective of the study is to find the effect of oral antihypertensive medication in blood pressure elevation and their outcomes in Pakistani environment. This is basically a therapeutic approach.

METHODOLOGY OF THE STUDY

This study was conducted at Nishtar Hospital, Multan, Pakistan during 2017. This study was conducted according to the rules and regulations of ethical committee of hospital. This research will help towards next findings of effect of blood pressure in hypertension and cardiovascular diseases.

DATA COLLECTION

The data was collected from 100 patients which was suffering from high blood pressure use any kind of oral medication for treatment. We collect the data in two sections, as first of all we collect some demographic information regarding age, sex, socio-economic status and history of blood pressure. Then in second part we collect data regarding high blood pressure, use of medication and heart issues. For this purpose we prepare a questionnaire and fill that from patients.

STATISTICAL ANALYSIS

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS

Despite the lack of evidence of an immediate increase in risk of major adverse cardiovascular events, primary care physicians often are hesitant to send patients with severe blood pressure elevations home. As a result, it remains common practice to acutely lower blood pressure using short-acting antihypertensives.

Table 01: Statistical analysis values of Control group and diseased group

Variable	Diseases Group	Control Group	t Value	p Value
Age (Year)	56.56±8.46	53.64±8.36	1.716	0.081
BMI (kg/m ²)	24.31±2.26	23.37±2.09	2.195	0.031
SBP (mmHg)	140.36±15.70	116.53±13.46	8.248	0.000
DBP (mmHg)	87.94±10.69	75.81±9.94	5.967	0.000
PP (mmHg)	52.42±12.87	40.72±8.74	5.426	0.000
FBG (mmol/l)	5.12±0.65	5.06±0.49	1.764	0.081
TG (mmol/L)	1.74±0.75	1.69±0.86	1.838	0.071
TC (mmol/L)	4.95±0.76	4.88±0.82	1.712	0.090
HDL-	1.30±0.43	1.31±0.56	1.717	0.089
LDL-C	3.46±0.58	3.38±0.66	1.139	0.266

Patients with symptoms such as headache, lightheadedness, shortness of breath, epistaxis, or anxiety are more likely to benefit from these agents.^{14,15,21} When blood pressure improves, long-acting antihypertensive therapy should be initiated, restarted, or adjusted.²² Table 02 includes selected oral antihypertensives for the treatment of severe asymptomatic hypertension.

Table 02: Oral antihypertensive medication for acute blood pressure

MEDICATION	DOSAGE	COMMENTS
Onset of action over several days		
Angiotensin-converting enzyme inhibitors		
Lisinopril	10 mg once per day	Consider alternative in patients with acute kidney injury or severe renal disease; may cause hyperkalemia and angioedema
Ramipril (Altace)	2.5 to 10 mg once per day	
Angiotensin receptor blocker		
Telmisartan (Micardis)	40 mg once per day	Consider alternative in patients with acute kidney injury or severe renal disease; may cause hyperkalemia
Beta blockers		
Atenolol	25 to 50 mg once per day	Avoid in patients with bradycardia; may cause bronchospasm
Metoprolol succinate (Toprol XL)	25 to 100 mg once per day	
Calcium channel blockers		
Amlodipine (Norvasc)	2.5 to 5 mg once per day	May cause flushing and edema
Nifedipine*	30 mg once per day	
Diuretic		
Hydrochlorothiazide	12.5 to 25 mg once per day	Use with caution in patients with gout; may cause hypokalemia and hyponatremia
Onset of action over several hours		
Alpha blocker		
Prazosin (Minipress)	1 to 2 mg twice per day	May cause syncope, typically with the first dose; tachycardia; and orthostatic hypotension
Angiotensin-converting enzyme inhibitor		
Captopril	25 mg two or three times per day	Consider alternative in patients with acute kidney injury or severe renal disease; may cause rash, hyperkalemia, and angioedema
Beta blocker		
Labetalol	100 mg twice per day	May cause orthostatic hypotension and nausea
Calcium channel blocker		
Diltiazem	30 mg four times per day†	May cause edema and headache

DISCUSSION

Blood pressure elevations during hospitalization are often exacerbated by pain, anxiety, or acute illness. When these factors have been excluded and the patient remains hypertensive, it is best practice to reinitiate or adjust oral antihypertensive therapy in those with preexisting hypertension⁸. Our approach to understand disease development in early life, identify key pathways of interest in predisposition to hypertension and develop specific preventive approaches has been to use multi-modality imaging to capture information on cardiovascular structure and function 'from heart to capillary'⁹. With this approach it becomes possible to model the interrelationship between features of the cardiovascular system and, with longitudinal data, study the progression of disease across vessel and heart. By extending the data collection to other organs such as brain and liver, a holistic view of disease development can be captured¹⁰.

High blood pressure was the leading risk factor for the overall global burden of disease in 2010. The recent decrease in cardiovascular mortality in high-income countries has been associated with a rise in the numbers of patients living with cardiovascular disease, and the wider use of preventive drugs. Thus, an up-to-date understanding of the associations of blood pressure with different non-fatal and fatal cardiovascular disease outcomes would help to refine strategies for primary prevention and inform the design of future clinical trials¹¹.

The National Health Survey of Pakistan estimated that hypertension affects 18% of adults and 33% of adults above 45 years old. In another report, it was shown that 18% of people in Pakistan suffer from hypertension with every third person over the age of 40 becoming increasingly vulnerable to a wide range of diseases¹²⁻¹⁴. It was also mentioned that only 50% of the people with hypertension were diagnosed and that only half of those diagnosed were ever treated. Thus, only 12.5% of hypertension cases were adequately controlled¹⁵. Some remote areas like Balochistan, there is a paucity of data but the control rate is likely to get even worse¹⁶.

CONCLUSION

In conclusion, in patients without previous hypertension, oral antihypertensive therapy can be initiated during the hospitalization with close outpatient follow-up. Although there is often reluctance to discharge patients with systolic blood pressure of more than 180 mm Hg or diastolic blood pressure of more than 100 mm Hg, these values in the ambulatory clinic are appropriately managed in the outpatient setting. A significant benefit for hospitalized patients is the opportunity to recognize severe blood pressure elevations and improve transitional care for the primary care physician.

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