

DESCRIPTIVE STUDY ON PRESENTATION OF PREOPERATIVE HYPERTENSION IN PATIENTS UNDERGOING SURGERY

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ABSTRACT

Objective: Hypertension is an abnormality in surgical procedures and during anesthesia. In this observational study we investigate and treat the patients of hypertension in patients undergoing surgery in newly diagnosed hypertension and known hypertensive with uncontrolled Blood Pressure. **Type of study:** Descriptive Observational **Place of Study:** PMCH Nawabshah. **Duration of study:** From November 2016 to October 2017. **Methods:** This descriptive study was conducted in OPD department of Medicine. All patients came for surgery of various diseases with known Hypertension or newly diagnosed Hypertension. Study was done on Performa with informed consent of the patients or relatives. Non surgical hypertensive patient were excluded from the study. Collected data was analysed using SPSS 15 version. **Results:** 102 patients were enrolled for this study. Male patient = 58, Female patient = 44. Age range 35-67 years mean age = 56 ± 4.9 , Systolic BP range 180-240 mmHg mean 217.35 ± 13 , Diastolic BP range 95-140 mmHg mean 117.94 ± 11 . Surgical diagnosed cases were 9 thyroid, 28 inguinal hernia, 14 hemorrhoids, 12 cholelithiasis, 3 incisional hernia, 21 renal stone, 5 vesical calculus, fistula in ano 3, 7 enlarged prostate. Out of 102 patients 9 patients were diabetic and one patient was in renal failure after investigations. **Conclusion:** Preoperative Hypertension is major problem in those patients who came for surgery. Many patients are asymptomatic diagnosed first time with elevated Blood Pressure and postponement of surgery. With proper management of Hypertension with anti hypertensive drugs, patient can be operated and morbidity and mortality can be reduced.

Key words: Hypertension, Preoperative, Postoperative, Blood Pressure control, Hypotension

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INTRODUCTION

Hypertension is defined as elevation of Blood Pressure two or more than two readings on two or more than two occasions. Systolic BP > 140 and Diastolic BP > 90 mmHg without any precipitating cause.¹ According to NHANES survey, data during 2011-2012 about 1/3 of adult male or female are hypertensive in the USA population. In almost half of the 71 million adults, Blood Pressure is uncontrolled. 36% patients are unaware of Hypertension. After treatment Blood Pressure is controlled in only 60% of patients. Blood Pressure measurement categories are (140-159/90-99 mmHg) stage 1 and greater than (160/100 mm Hg) stage 2.²

Increased Blood Pressure is more common in black population than white population. World wide 1 billion peoples are affected by Hypertension and death ratio is about 7.1 million according to WHO.³ Patients undergoing surgery due to any surgical disease are at risk of mortality and morbidity due to chronic Hypertension. Hypertension can be complication of heart surgery.⁴ There are 25% cases of preoperative Hypertension in patients undergoing surgery.⁵

There is elevation of Blood Pressure and tachycardia during anesthesia and during surgery.⁶ According to JNC 8th report if Blood Pressure is greater than 150/90 mmHg in > 60 years old age, antihypertensive treatment should

be initiated. In younger age 18-59 years antihypertensive should be initiated if Blood Pressure is more than 140/90 mm Hg. Doctors who give anesthesia face two problems in Hypertension either postponement of operation or further investigations. Chronic Hypertension is a major risk factor for congestive cardiac failure, stroke, myocardial infarction, peripheral vascular disease and renal failure. Continued increased Blood Pressure is a preoperative risk. In uncontrolled Hypertension surgery is postponed. Loss of arterial elasticity, both larger conduit and smaller arterioles are affected in long lasting Hypertension. Wide pulse pressure results due to arterial stiffening. Myocardial ischemia or myocardial infarction occur due to untreated long lasting Hypertension. Systolic and diastolic dysfunction leads to congestive cardiac failure. Coronary artery disease results due to Hypertension associated with obesity, diabetes, dyslipidemia. Ischemic and hemorrhagic stroke is a complication of Hypertension.⁷

Sudden increase in Blood Pressure leads to brain injury due to intra cranial hemorrhage. In Hypertension treatment and recognition is important in emergency anesthesia and surgery, surgical medical conditions trigger sympathetic activity resulting in elevation of Blood Pressure.⁸ Acute elevation of Blood Pressure in patients are at risk of end organ damage and preoperative complications if not diagnosed and treated early in time.⁹

Pathophysiology of Hypertension is not clear. There are two mechanisms to precipitate Hypertension, i. e. failure of cerebral blood flow auto regulation and sudden increase in systemic vascular resistance. Elevated Blood Pressure in preoperative period, induction of anesthesia, tracheal tube intubation can be the cause of hypertensive crisis. Induction of anesthesia increase Blood Pressure 20 mmHg in normal peoples and 90 mmHg in hypertensive patient¹⁰.

The goal of treatment is normalize blood pressure

with antihypertensive drugs. These drugs reduce Blood Pressure and reverse the remodeling of left ventricle and regression of left ventricular hypertrophy. Drugs for the treatment of Hypertension are ACE inhibitors, ARBs, diuretics and beta blockers. Criteria how to initiate therapy. ACE inhibitors and ARBs are recommended age <55 years. In uncontrolled Blood Pressure and patients with heart failure combination and other drugs are recommended. Current recommendations for the treatment of Hypertension are ACE inhibitors, CCB and diuretics are recommended in age >55 years. Diuretics should be continued during preoperative period in patients with congestive cardiac failure, hypokalemia due to diuretics can cause arrhythmia. Beta blockers are preferred in young patients in those who are intolerant to ACE inhibitors or ARBs and in patients with increased sympathetic drive.¹¹

METHODS

This descriptive observational study was conducted in OPD department of Medicine PMCH Nawabshah from November 2016 to October 2017. Study was carried out on proforma with questionnaire with the permission of the patient or relatives. All the patients came for fitness due to postponement of their surgery. Detailed history was taken along with examination. The investigations advised were RBS, Urea, Creatinine, X-ray Chest, Ultrasound abdomen, ECG and Echo. Collected data was analysed using SPSS 15 version.

INCLUSION CRITERIA

All patients with increased Blood Pressure. All patients with surgical disease. Age above 12 years and below 70 years

EXCLUSION CRITERIA

With normal Blood Pressure. Patients without surgical disease. Age below 12 years and above 70 years

RESULTS

102 patients were enrolled for this study. 54

patients were from Rural area and 48 patients were from Arabian area. Male patient = 58, Female patient = 44. Age range 35-67 years mean age = 56±4.9, Systolic BP range 180-240 mmHg mean 217.35±13, Diastolic BP range 95-140 mmHg mean 117.94±11. Surgical diagnosed cases were 9 thyrod, 28 inguinal hernia, 14 hemorrhoids, 12 cholilithiasis, 3 incisional hernia, 21 renal stone, 5 vesical calculus, fistula jnano 3, enlarged prostate. Out of 102 patients 9 patients were diabetic and one patient was in renal failure after investigations. RBS ranged 120-430 mg, Urea 23-130, Creatinine 0.7-4.3. polycystic kidney was noted in two patients on ultrasound scan.

All patients were treated with antihypertensive drugs i.e. ACE inhibitors, ARBs, Calcium channel blockers and combination of Calcium channel blockers and ARBs or Calcium channel blockers and ACE inhibitors, 28 patients were treated with triple combination with diuretic or beta blockers uncontrolled Blood Pressure. Patients were educated about uninterrupted antihypertensive therapy and follow up treatment.

Daily check of Blood Pressure was advised to watch response of drugs. All the patients were operated after control of Blood Pressure except three patients who were seriously ill. One patient referred to nephrologist for further treatment. Two patients remain unfit due to continuous uncontrolled Blood Pressure and surgery was postponed up to the control of Blood Pressure. In statical analysis male are marked as 1, female as 2. Education marked 1 as uneducated, 2 as primary, 3 as middle, 4 as matriculation, 5 as intermediate.

Occupation marked 1 as government job, 2 as house wife, 3 as farmer and 4 as private job.

Sex				
Variables	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	58	56.9	56.9	56.9
2.00	44	43.1	43.1	100.0
Total	102	100.0	100.0	

Education Percentage				
Variables	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	44	43.1	43.1	43.1
2.00	14	13.7	13.7	56.9
3.00	28	27.5	27.5	84.3
4.00	11	10.8	10.8	95.1
5.00	5	4.9	4.9	100.0
Total	102	100.0	100.0	

Occupation				
Variables	Frequency	Percent	Valid Percent	Cumulative Percent
1.00	15	14.7	14.7	14.7
2.00	35	34.3	34.3	49.0
3.00	32	31.4	31.4	80.4
4.00	20	19.6	19.6	100.0
Total	102	100.0	100.0	

Descriptive Statistics					
Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	102	35.00	67.00	56.0000	4.94524
Sex	102	1.00	2.00	1.4314	0.49771
Education	102	1.00	5.00	2.2059	1.24549
Occupation	102	1.00	4.00	2.5588	0.97059
Residence	102	1.00	2.00	1.4706	0.50160

Paired Samples Correlations				
Variables	N	Correlation	Sig.	
Pair 1 Age & Sex	102	0.101	0.315	
Pair 2 Education & Occupation	102	0.543	0.000	
Pair 3 Residence & RBS	102	0.094	0.350	
Pair 4 Urea & Creatinine	102	0.828	0.000	
Pair 5 Systolic BP & Diastolic BP	102	0.225	0.023	

DISCUSSION

In this study majority of the patients were unaware about Hypertension, they noticed High Blood Pressure day before surgery. Main aim of this study was to investigate the patient and control Blood Pressure with antihypertensive drugs, to prevent from complications during surgery and after surgery. In this study BP noted on the day of surgery and day before surgery were elevated before anesthesia. Mean arterial pressure values were higher on the day of operation and before induction of anesthesia.

Patients presented with Hypertension resulting postponement of surgery, waiting for well control Blood Pressure. In 207 patients who receive diazepam or relaxing technique before surgery and on the day of surgery, it was found that relaxing techniques was as effective as diazepam to control Blood Pressure in a study.¹²

Underlying co morbidity and surgical procedure related to preoperative Hypertension there are many studies to address preoperative management of Hypertension. Some studies take systolic Blood pressure as indicator of postoperative Hypertension and few studies mark Blood Pressure reactivity to preoperative stressors was shown in patients with uncontrolled idiopathic Hypertension. Hemodynamic response was similar to stressors in patients with adequate control of Blood Pressure. Normal vascular reactivity was observed in patients with well controlled Blood Pressure. To deepen anesthesia usually in combination with beta-adrenergic antagonists and vasodilators is common method to reduce intraoperative Blood Pressure. For the management of preoperative Hypertension treat all the hypertensive patients.¹³

Deep anesthesia with opoid and vasodilators provided better control of preoperative High Blood Pressure. Hypertensive patients experience fluctuations in intraoperative Blood Pressure and associated acute myocardial infarction. Preoperative cardiac morbidity and ischemia can be reduced by adequate control of Blood Pressure.¹⁴

Abrupt withdrawal of beta blockers may affect Blood Pressure and heart rate and can precipitate myocardial infarction. Diuretics are contraindicated on the day of surgery because of adverse interaction of diuretic induced volume depletion, the use of anesthetic agents and potassium depletion. During anesthesia due to rennin angiotensin-aldosterone system involvement ACE inhibitors should not be given on the day before surgery, refractory hypertension

can occur.¹⁵

To maintain normotension management of hypothermia with rewarming, treatment of pain, hypoxia and anxiety are essential. Preoperative Hypertension are at risk of postoperative Hypertension. Care should be taken to give intravenous sodium or oral sodium after surgery when oral intake is allowed. If patient is unable to take oral drugs needs treatment, parental alternatives are given. These i/v drugs are verapamil, diltiazem, enalapril and transdermal clonidine patch. Nitroglycerin, labetalol and nitroprusside are appropriate for severe Hypertension, acute myocardial infarction, stroke and death are reported with sublingual nifedipine. According to ADA majority of diabetic patients are hypertensive. Nephropathy in diabetic type 1 is a cause of Hypertension. Hypertension is related to cardiometabolic factors in type 2 diabetes mellitus.¹⁶

Commonest cause of CCF is Hypertension. Risk of coronary artery disease and stroke and death are reduced by antihypertensive therapy. Renal function is improved by reduction of Blood Pressure in studies. Detection of microalbuminuria and treatment with ACE inhibitors may prevent renal failure.¹⁷

Regular exercise can decrease weight. With moderately physical activity Blood Pressure may be lowered by 4-9 mmHg. These activities are daily walking for 30 minutes per day can reduce Blood Pressure with additional health benefits.¹⁸

CONCLUSION

Hypertension is a problem in patients who came for surgery were asymptomatic and diagnosed as High Blood Pressure. Patients with mild to moderate Hypertension undergoing surgery are at risk of High Blood Pressure during anesthesia. There is problem of ischemia postoperatively. Medical fitness is compulsory with drug treatment with antihypertensive preoperative and postoperative complication can be reduced.

Cardiac complications can occur initial days postoperatively. Careful monitoring and treatment of the patient preoperative and postoperative can be prevented from complications. Education of the patient about Hypertension, continuous treatment and change in life style avoiding salty food morbidity and mortality can be reduced.

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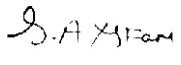
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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Jeando Khan Daidano	Concept, Design Literature review, write-up and data analysis	
2	Sikander Azam Yusufani	Data collection, drafting, interpretation and analysis	
3	Nazia Azam Yusufani	Literature review, write-up, analysis and proof reading	