

## Hypertension: A Case Study

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### Case Report

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### Abstract

Hypertension is a haemodynamic disorder, characterized by an increase in peripheral vascular resistance that results in complicated diseases i.e myocardial infarction, renal failure, strokes and even death if not diagnosed early and treated properly. Generally, known as high blood pressure and defined as BP  $\geq 140/90$  millimeters of mercury (mmHg). Only way to diagnose hypertension is measurement of blood pressure. Patients suffering from hypertension may experience symptoms such as dull headaches, vomiting, dizzy spells, and more frequent nosebleeds. Treatment for hypertensive patients includes both pharmacological (medication) and non-Pharmacological (lifestyle modifications) therapy. In this report the referred case study of hypertension was the scenario of 50 years old female suffering from symptoms of headache, nausea, drowsiness and blurred vision. She was also the patient of Diabetes Mellitus Type 2. She was treated with anti-hypertensive and hypoglycemic therapy along with life style modifications which showed good management of both hypertension and diabetes.

**Keywords:** Hypertension; Symptoms; Complications and Treatment

### Introduction

Hypertension is a haemodynamic disorder, characterized by an increase in peripheral vascular resistance that results in complicated diseases i.e myocardial infarction, renal failure, strokes and even death if not diagnosed early and treated properly [1]. Generally, known as high blood pressure and defined as BP  $\geq 140/90$  millimeters of mercury (mmHg). Approximately 970 million people worldwide have high BP. It is estimated that 1.56 billion adults will be living with hypertension by 2025 [2-7]. The overall occurrence of hypertension is similar between both males and females, but differs with age [2].

In majority of patients, cause of hypertension is unknown. This is called as primary or essential

hypertension. While on the other hand, some patients have a specific cause of their high blood pressure that is classified as secondary hypertension [2-5]. Above, 90% of hypertensive patients have primary hypertension [2]. Primary hypertension cannot be completely cured but can be controlled by appropriate therapy including lifestyle modifications and medications. This type of hypertension develops gradually in many years [2,3,5].

Less than 10% of hypertensive patients have secondary hypertension [2]. It is caused by some underlying medical condition or medication. This can be resolved by treating the underlying medical condition or removing the medication. The most common cause of secondary hypertension is kidney impairment i.e CKD. This type of hypertension tends to occur suddenly causing more high blood pressure as compare to primary

hypertension [2,3,5]. Multiple factors that control the blood pressure contribute in the development of primary hypertension. The two primary factors are problems in either hormonal [natriuretic hormone, rennin angiotensin- aldosterone system (RAAS)] mechanisms or electrolytes (sodium, chloride, potassium) disturbances [2,5].

Hypertension is also known as “silent killer” because of absence of typical sign and symptoms. And many people even unaware of having hypertension [3]. Some patients may experience symptoms such as dull headaches, dizzy spells, vomiting, drowsiness and more frequent nosebleeds. The only way to diagnose

hypertension is measurement of blood pressure by some physician or other health care professional [3,4].

Various factors increase the person’s risk for developing hypertension includes health conditions, lifestyle, and family history. Some risk factors cannot be controlled such as age, race and family history. While others such as physical activity, diet and stress can be controlled to decrease the risk of developing hypertension in patient [2-4].

Blood pressure is classified into one of four categories: normal, prehypertension, stage 1 HTN and stage 2 HTN [2,5].

Classification of Blood Pressure in Adults (age ≥ 18 years)		
Classification	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
Normal	<120	<80
Prehypertension	120-139	80-89
Stage 1 hypertension	140-159	90-99
Stage 2 hypertension	≥160	≥100

**Table 1:** Classification of Blood Pressure in Adults

Treatment for hypertensive patients includes both pharmacological (medication) and non-Pharmacological (lifestyle modifications) therapy [2,3].

Moreover, lifestyle modifications should be suggested to lower blood pressure [2,3,8]. American Heart Association (AHA) recommends DASH diet to help lowering blood pressure. The DASH diet suggest a food plan rich in fruits, vegetables, whole grains, fish, and poultry while limit the intake of sweets, beverages, and red meat. Moreover, the DASH diet recommends that men restrict alcohol intake to two or fewer drinks a day and women to one or less. In addition to dietary modifications, exercise is also recommended.

If non pharmacological therapy is insufficient in the management of high blood pressure, Pharmacological therapy is started [2,3,8,9]. The JNC-8 guidelines on hypertension recommend that initial pharmacologic therapy should include a thiazide-type diuretic, calcium channel blocker, angiotensin- converting enzyme inhibitor, or angiotensin receptor blocker. The objectives of initiating drug therapy are to achieve and maintain the goal of blood pressure. If patients’ blood pressure goal is not attained after one month of therapy, the dose of initial drug can be increased or second drug can be added [8]. Other medications used for the treatment of hypertension include beta-blockers, , alpha-blockers, aldosterone antagonists and direct renin inhibitors [8,9].

### Case Presentation

A 50 years old female teacher visited Services Hospital Lahore with the complaints of headache, nausea, drowsiness, blurred vision, and fatigue. She was experiencing those symptoms last 2 months. She was also suffering from diabetes mellitus type 2 since 2years. She had recently diagnosed with hypertension.

### Past Medical History

Patient was suffering from Diabetes Mellitus Type 2 since 2 years.

### Past Medication History

She was using vildose (vidagliptin) 50mg OD since 2 years.

### History of Present Illness

She was complaining of headache, nausea, drowsiness, blurred vision and fatigue.

### General Examination

Weight: 72 kg  
Height: 5 feet 2 inches  
BP : 150/100 mmHg  
Pulse: 88 beats/ min

**Lab Findings**

Blood glucose level:

Fasting = 140mg/dl

Random= 180mg/dl

**Medication Therapy**

Brands	Generics	Strength	Frequency
Monitor	Bisoprolol Fumarate	5mg	OD
Triforge	Amlodipine/Valsartan/Hydrochlorothiazide	5/160/12.5mg	OD
Sitamet	Sitagliptin + Metformin HCl	50mg +1000mg	BD

**Table 2:** Medication Therapy.

**Interventions**

- Suggest the physician to change the drug therapy for hypertension by prescribing the antihypertensive medication of two combinations instead of TRIFORGE.
- Sitamet should be taken with meal twice daily.
- Interactions between different drugs were checked. There was no interaction between Sitamet, Triforge and Monitor.
- Counsel the patient to stick to drug regimen and show good compliance.
- Suggest patient to routinely monitor blood pressure and to check HbA1C level after every 3 months.

**Care Plan**

Life style modifications:

- Exercise and walk to reduce body weight
- Proper diet rich in fruits, vegetables, whole grains, low fat poultry and fish
- Low dietary salt and sugar intake
- Avoid red meat, fats and alcohol.

**Outcome**

Patient showed good compliance with therapy. Monitor and Triforge usage showed reduction in BP. After using Sitamet twice daily the blood glucose level of patient was monitored.

Fasting: 106 mg/dl

After meal: 150 mg/dl

Patient was suggested to visit physician if any unusual symptom occur.

**Discussion**

Approximately one in three adults have high blood pressure thus hypertension is one of the most prevalent disease in world [2,3]. Patient suffering from hypertension may be due to stress, lack of activity, obesity, and family history etc [2-4]. All these risk factors if not properly controlled and the condition if not

properly treated may increase the risk of developing several serious health conditions such as heart attack, stroke, chronic heart failure and kidney disease [2,3]. So, hypertensive patient should properly manage her blood pressure by using recommended antihypertensive medication and also by adopting life style modifications such as DASH [Dietary Approaches to Stop Hypertension] diet plan [2,3,10]. DASH diet plan suggest the food rich in fruits, vegetables and fish and limiting the use of salt, sweet, malcohol and red meat. It recommends that sodium intake should be less than 1500 mg/day (1.5g) and alcohol intake should be up to two or fewer drinks for males and one or less for females. Moreover, exercise is also recommended [10].

As, patient was also suffering from diabetes mellitus type 2. This may be due to many reasons such as less production of insulin from beta cells of pancreas or development of body resistance against insulin [11]. Diabetes and hypertension often occur together because of similarity in physiological traits. So, a patient with comorbidity of hypertension and diabetes must have a proper control of both. In the setting of diabetes, there should be a target blood pressure of <130/80 [11]. To achieve this target both pharmacological and non pharmacological therapy is needed. The best drugs to recommend in diabetic patients with high blood pressure are ACE inhibitors, diuretics, calcium channel blockers, angiotensin receptor blockers, beta blockers and rennin inhibitors. While non-drug therapy includes dietary changes, salt restriction, alcohol limitation and exercise to lose weight [11]. This all is also recommended in DASH (Dietary approach to stop hypertension) diet plan. So, to prevent complications all these necessary guidelines should be followed.

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