

# The Incidence of Hypertensive Crisis in a Tertiary Hospital

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**Abstract:** Hypertension is the most widespread disease nowadays and one of the most common causes of visits and emergencies with significant acute and chronic morbidity. The aim of the study to assess the incidence of the hypertensive crisis. The mean age of patients was 58.4 ( $\pm 13.2$ ) years. 63% of patients were males and 37% females. 27 (24.3%) of patients manifested stage I hypertension, 39 (35.1%) stage II and 45 (40.5%) stage III (fig. 1). The complaints most frequently attributed to high BP were headache (42.5%), dyspnea (27.8%), chest pain (19.2%), dizziness (35.1%), vomiting (8.6%), epistaxis (3.7%) and neurologic deficit (4.2%). Hypertensive crisis was observed in 36 patients (32.4%) and all were classified as hypertensive urgencies. Complications were observed in 43 (38.7%) of patients with hypertensive crisis. Hypertensive crisis is a clinical entity associated with high morbidity in the emergency room. Adequate control of blood pressure is crucial to prevent permanent damage to organs.

**Keywords:** hypertensive crisis, incidence, emergency, complication

## 1. Introduction

Systemic hypertension is a highly prevalent disease, affecting approximately 15 to 20% of the adult population, and is considered one of the major cardiovascular risk factors. Hypertension is one of the most common chronic medical conditions in the world, affecting close to 30% of the population above 20 years old (1,2). While chronic hypertension is an established risk factor for cardiovascular, cerebrovascular, and renal disease, acute elevations in blood pressure (BP) can result in acute end-organ damage with significant morbidity. Hypertensive emergencies and hypertensive urgencies are commonly encountered by a wide variety of clinicians. Prompt recognition, evaluation, and appropriate treatment of these conditions are crucial to prevent permanent end-organ damage (3,4). A hypertensive crisis is defined as an acute and symptomatic elevation of blood pressure requiring immediate reduction in order to avoid acute target-organ damage and death (5). Although theoretically simple in practice, the management of hypertensive crises has been object of many controversies related mainly to the correct diagnosis and to the definition of emergency and urgency, as well as to the choice of an appropriate treatment and its correct use within the different settings in which the crises occur. This assumes greater importance when we consider that the correct diagnosis and appropriate treatment are able to prevent the serious complications resulting from this medical condition. However, it has been verified that many times the recommendations of international organizations have not been effectively followed in the clinical practice. In addition, information regarding the prevalence of and medical care conditions for hypertensive crises (6,7) are scarcely available in our midst. The lack of standardization on the diagnosis and treatment of hypertensive crises is commonly seen in many health care services. This situation is aggravated because the diagnosis is frequently omitted in the presence of a concomitant clinical situation, which makes it difficult to estimate the actual prevalence of hypertensive crises. On the other hand, in situations characterized as pseudohypertensive crises, the use of medications and precipitous fall in blood pressure may be harmful to the

patient. In light of the magnitude of the clinical and epidemiological variables involved in the management of hypertension, and especially of hypertensive crises, we found that this study was timely, in the sense of demonstrating the real prevalence of the problem in our midst, and how physicians are dealing with this clinical situation.

## 2. Material and Methods

This is a prospective study including 111 patients who presented with hypertensive crisis in the emergency room of University Hospital Center "Mother Teresa" Tirana during the year 2014. All patients over 18 years of age who presented to the emergency department with a hypertensive crisis were included in the study. According to the pressure levels, hypertension was classified as: mild or stage I (blood pressure  $\geq 140 \times 90$  and  $< 160 \times 100$  mmHg); moderate or stage II (blood pressure  $\geq 160 \times 100$  and  $< 180 \times 110$  mmHg); and severe or stage III (blood pressure  $\geq 180 \times 110$  mmHg). Hypertensive crisis was defined as a significant and symptomatic blood pressure elevation (generally equal to or higher than  $180 \times 110$  mmHg), and was classified as an emergency if imminent life threat or loss of organic function were present, and as an urgency in the absence of these risks. Data on demographics, comorbid conditions, clinical symptoms, blood pressure readings at subsequent time intervals, and antihypertensive drug therapy was recorded. A history of physician-diagnosed diabetes mellitus (DM), chronic kidney disease (CKD), ischemic heart disease (IHD), and stroke was noted from the patient's medical record file. DM was defined as fasting plasma glucose  $\geq 126$  mg/dL at a prior visit. CKD was defined as rise in serum creatinine of  $> 1.2$  mg/dL for 3 months. Continuous variables were expressed as mean  $\pm$  SD. Statistical analysis was performed by Student's  $t$  and  $\chi^2$  tests.

## 3. Results and Discussion

The mean age of patients was 58.4 ( $\pm 13.2$ ) years. 63% of patients were males and 37% females. 27 (24.3%) of patients manifested stage I hypertension, 39 (35.1%) stage II

and 45(40.5%) stage III (fig. 1). The complaints most frequently attributed to high BP were headache (42.5%), dyspnea (27.8%), chest pain (19.2%), dizziness (35.1%), vomiting (8.6%), epistaxis (3.7%) and neurologic deficit (4.2%). Hypertensive crisis was observed in 36 patients (32.4%) and all were classified as hypertensive urgencies. The mean (SD) systolic blood pressure (SBP) recorded in patients with hypertensive crisis versus no hypertensive crisis in ER was 204 (18.2) and 161 (13.387) ( $p < 0.001$ ) (fig. 2). The mean (SD) diastolic blood pressure in patients with hypertensive crisis versus no hypertensive crisis in ER was 109 (15.5) mm Hg and 89 (13.3) mm Hg, respectively, ( $p < 0.001$ ) (fig. 3). Complications were observed in 43 (38.7%) of patients with hypertensive crisis. The most common complication was acute renal failure (21.3%) followed by pulmonary edema (38.4%), myocardial infarction (11.1%) and stroke (7.4%). The rate of complication was significantly higher among patients with hypertensive crisis as compared to patients without hypertensive crisis. The incidence of hypertensive crisis in our study was 32.4%. This finding indicates that hypertensive crises represent an important and common event in emergency medicine and require appropriate resources for their diagnosis and treatment (8-10). The incidence of hypertensive crisis is higher than that reported in other studies. This indicates that we see more hypertensive crisis compared to the above studies (11,12).

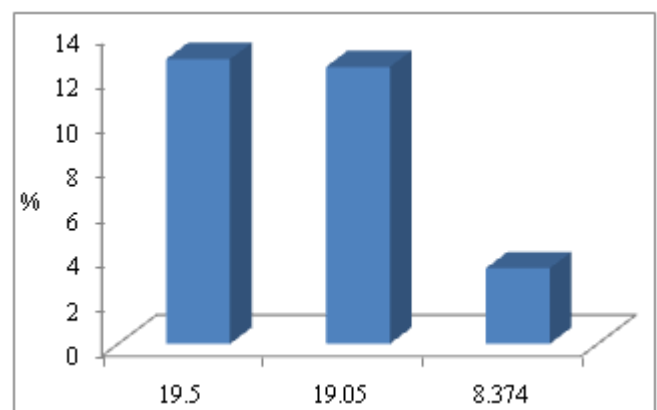
#### 4. Conclusion

A targeted medical history and physical examination supported by appropriate laboratory evaluation is required in patients presenting with a possible hypertensive crisis. The patient's hypertensive history and prior blood pressure control should be ascertained, as should any history of renal and cardiac disease. The use of prescribed or nonprescribed medications, and recreational drugs should be determined. The blood pressure in both arms should be measured by the physician. In obese patients appropriately sized cuffs should be used. Physical examination should include palpation of pulses in all extremities, auscultation for renal bruits, a focused neurologic examination, and a fundoscopic examination. Patients with hypertensive emergencies require the immediate reduction of the elevated BP to prevent and arrest progressive end-organ damage. The best clinical setting to achieve this BP control is in the ICU, with the use of titratable IV hypotensive agents.

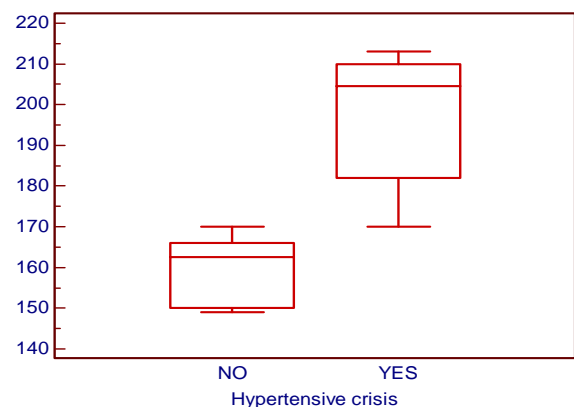
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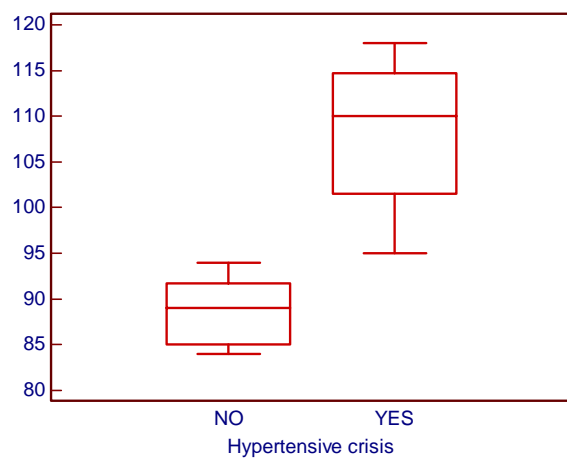
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**Figure 1:** Distribution of patients according to the stage of hypertension



**Figure 2:** Systolic blood pressure in patients with and without hypertensive crisis



**Figure 3:** Diastolic blood pressure in patients with and without hypertensive crisis