

Original Research Article

A clinical study of hypertensive emergencies

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ABSTRACT

Background: Hypertensive crisis is characterized by high blood pressure that is highly likely to cause pressure against the arterial walls causing chronic cardiovascular diseases. It has caused higher mortality and morbidity rates in both adults and children in equal measures. Hypertensive emergency is scientifically believed to cause several vital organ failures. The current study aims to critically evaluate hypertensive emergencies and the spectrum of end-organ damage due to risk factors of hypertensive emergencies.

Methods: This prospective study was conducted on 150 patients with a severe arterial blood pressure of >180/120 mmHg) admitted at Area hospital, Zaheerabad. The doctors performed a detailed medical and clinical examination on the patients to assess organ damage. 120 patients met the hypertensive emergency (HTN-E), while 30 patients met the hypertensive urgency (HTN-U).

Results: Patients who reported signs of HTN-E were older adults who are more sedentary, highly intensive smokers, and non-adherent to all forms of hypertensive medications than those with HTN-U. Most of the HTN-U patients had a known history of hypertension than HTN-E. There is about 2% prevalence of hypertensive crisis while admitted at the ICU.

Conclusions: Early assessment of the level of organ damage is key in regulating severe complications of hypertension.

Keywords: Hypertensive crisis, Hypertensive emergency, Hypertensive urgency, Chronic cardiovascular diseases

INTRODUCTION

Hypertensive crisis exists among severe clinical conditions that remain unsolved for centuries. The condition is characterized by high blood pressure against arterial walls and remains the leading cause of cardiovascular diseases, such as ischemia, coronary heart disease, peripheral arterial disease, renal failure, and hemorrhagic stroke, among others. Consequently, hypertension accounts for several cases of morbidity and mortality in both the young and adult population across the globe. While previous scientific inquiries have failed to produce sustainable interventions for hypertension, knowledge in the currently available works of the literature suggests that hypertensive emergencies double the risk of vital organ failures. In one

survey, the World Health Organization (2013) reported that common symptoms of acute organ failure include dyspnoea, giddiness, chest pain, loss of vision, and focal neurological deficits.¹ Hypertensive emergency refers to a severe increase in arterial blood pressure (>180/120 mmHg) characterized by progressive target organ failure.² The globe has witnessed a significant increase in hypertension among young and adult populations because of a sedentary lifestyle, smoking, and poor dietary patterns. As such, the research paper focuses on a critical evaluation of hypertensive emergencies, pondering profiles, and modes of presentation among patients admitted to Area hospital, Zaheerabad. Moreover, the paper examines the spectrum of end-organ damage in hypertensive emergencies.

METHODS

All the 150 patients admitted at Area hospital, Zaheerabad presented hypertensive crisis and were involved in the May 2019 to February 2020 prospective study that aimed at the evaluation of hypertensive emergency as well as related risk factors such as diseases associated with organ damage that are not limited to stroke, hypertensive encephalopathy, subarachnoid haemorrhage, acute pulmonary edema, acute myocardial infarction, transient ischemic attack; acute heart failure; progressive renal insufficiency and retinopathy. The health personnel conducted a detailed history analysis and clinical examination throughout the admission process. Any relevant diagnostic tests were conducted and data recorded to assess spectrum of organ damage. The study was inclusive of female patients but excluded those patients below 18 years and those showing signs of valvular heart disease.

Statistical analysis

Patients data were analyzed using central measure of tendency including finding out the mean and percentage variables. A table was used to analyses results obtained from patients to determine the relationship between the patient's symptoms and the risk factors of hypertensive crisis present in each individual cases. The statistical analysis was done using SPSS version 1.0.1

Table 1: Level of target organ damages as per hypertensive crisis (n=150).

Target organ damage type	No. of cases (%)
Retinopathy	55
Cerebral infarction	24
Intracerebral hemorrhage	17
Acute heart failure	21
Acute coronary syndrome	19
Transient ischemic attack	8
Subarachnoid hemorrhage	4
Hypertensive encephalopathy	2

RESULTS

The extent of organ damage was greatly dependent on the age of patients presenting or meeting the criteria of HTN-E and HTN-U. About 120 of the 150 patients presented HTN-E while 30 presented HTN-U. Patients who reported signs of HTC-E were older adults who are more sedentary, highly intensive smokers, and non-adherent to all forms of hypertensive medications that those with HTC-U. Most of the HTC-U patients had a known history of hypertension than HTC-E. There is about 2% prevalence of hypertensive crisis while admitted at the ICU.

Similarly, patients presented some signs and symptoms including, dyspnea, headache, chest pain, giddiness and many other signs and symptoms and all patients presenting

hypertensive crisis, emergency and urgency. The table 2 below summaries the above data.

Table 2: Comparative summary of the study data.

Sign and symptoms	HTN-C (n=150) (%)	HTN-E (n=120) (%)	HTN-U (n=30) (%)
Neurological motor deficit	31	51.23	0
Dyspnea	32	29.30	15.11
Headache	19	19.00	43.27
Chest pain	18	29	12.39
Giddiness	16	8.99	45.23
Epistaxis	15	2.10	33.32
Vomiting	7	6.11	29.22
Palpitation	6	7.34	20.12
Decreased urine output	3	12.17	0
Psychomotor agitation	2	5.97	8.22
Other	5	13.22	3

DISCUSSION

Brokmann et al defined a hypertensive emergency as the link between extremely high blood pressure and high clinical chances for target organ damage, for example, cardiac arrest or renal failure.³ The study further noted that physicians could only advocate automatic emergency treatment in the event that there are high chances for target organ damage in patients presenting with high blood pressure. Similarly, Astarita et al. observed that clinical characteristics of hypertension include blood pressures above 140 mmHg diastolic.⁴ According to the study, funduscopic findings pertaining to hypertension include excessive hemorrhages and papilledema, exudates. Elliott further established that cardiac symptoms of hypertension could range from prominent apical impulse and congestive heart failure to unusual cardiac enlargement.⁵ While gastrointestinal findings involve vomiting and nausea, renal findings include azotemia and oliguria. Hematological presentations, according to Salvetti et al., encompass microangiopathic hemolytic anemia.⁶

In the view of Salvetti et al., over one billion individuals across the world have experienced negative impacts of hypertension. Worth noting from the findings of Salvetti et al is the notion that more than forty percent of hypertension victims across the globe consists of adults aging 25 years and above.⁶ In Europe, hypertension emergencies exist among the leading health concerns, whereby an estimated prevalence rate exceeds forty percent annually. While the number of deaths resulting from hypertension increase annually, Makó et al further opines that early diagnosis and treatment can significantly minimize health complications that emerge from poorly managed hypertension.⁷ In one instance, Dunnsiri et al record that common complications among patients reporting to area hospital Zaheerabad

include heart attack, stroke, heart failure, blindness, kidney failure, and hypertensive crisis. Notably, all of the complications pose significant threats of mortality and morbidity among patients.⁸

Saladini et al found that hypertensive emergencies are clinical syndromes that present as complications of poorly treated or untreated hypertension. The study also defined a hypertensive emergency is severe hypertension causing acute end-organ failure.⁹ However, the authors differentiated hypertensive emergency from hypertensive urgency, expounding that the latter is a severe increase in blood pressure with no end-organ damage. From the evidence, one is guided to believe that classification of hypertensive urgencies, and hypertensive emergencies depend on whether or not the condition is presented with severe target organ failures, such as nephropathy, ischemia, and encephalopathy or retinopathy rather than based on the presence of high blood pressure only.

According to the empirical evidence at Area hospital Zaheerabad, the ratio of hypertensive crisis patients presenting with hypertensive urgencies and emergencies remains unknown. In a recent survey, however, Giannattasio et al reported that India exists among the countries with a high prevalence of hypertensive emergencies, with prevalence rates as high as forty percent.¹⁰ As a result, doctors and healthcare policymakers in India are likely to witness patients reporting with hypertensive emergencies as well as hypertensive urgencies. Dunnsiri et al linked the high prevalence rate in the region with poverty and inadequate care for people reporting to primary healthcare facilities. In essence, the majority of healthcare centers lack well-equipped emergency and urgency departments causing poor patient outcomes among people presenting with hypertension.

Marton-Popovici stressed that the sign and symptoms of hypertensive emergencies and urgencies varies, depending on the age, lifestyle, and underlying health conditions of patients.¹¹ In the context of Zaheerabad, headache, seizures, and focal neurologic symptoms are common among patients who report with hypertensive. Such patients may, upon physical examination, present with retinopathy characterized by arteriolar changes, exudates, and papilledema as well as hemorrhages. While cardiovascular symptoms of hypertensive vary across patients, Paini et al opine that some patients may present with angina, and severe left ventricular failure, or acute myocardial infarction. In some patients, the hypertensive crisis may cause severe renal malfunction characterized by hematuria or oliguria, owing to severe damage to the victim's kidneys.¹²

Saladini et al observed that pregnant mothers with a hypertensive crisis might experience life-threatening conditions, such as renal failure and cardiac arrest.⁹ While clinical features of pregnant patients vary, some may encounter visual field defects, seizures, severe headaches, altered mental status, severe abdominal pain, acute

cerebrovascular accidents, oliguria, and congestive heart failure.⁹ While the process of delivery can heal some conditions, the decision of terminating or continuing pregnancy among pregnant patients depends on the judgments of medical as well as obstetric personnel.

Salagre et al emphasize that aortic dissection is a critical syndrome among hypertensive patients and can warrant special consideration. The study further emphasizes that aortic dissection is vital for the patients reporting to the emergency teams with elevated blood pressure and severe chest pain. Salagre et al further argue that about seventy-five percent of patients presenting with type A dissection can die three weeks if left untreated.¹³ Accordingly, Salagre et al imply that a timely diagnosis of hypertensive crisis coupled with urgent treatment or management can increase patient outcomes in several cases worldwide.¹³ As such, physicians should collect a complete blood smear and count, blood urea nitrogen, electrolytes, urinalysis, creatinine, and electrocardiogram to exclude conditions like microangiopathic anemia patients suspected to have hypertension.

CONCLUSION

The current study explored the prevalence and nature or characteristics of patients presenting with hypertensive emergencies and urgencies at Area Hospital Zaheerabad. As a tertiary healthcare facility, Zaheerabad hospital arguably receives several patients presenting with cardiovascular conditions, the majority of which are experiencing hypertensive emergencies. Furthermore, the current study records that majority of hypertensive crises involve high blood pressure characterized by the presence of or symptoms of target end-organ failure. According to the current research, target end-organ malfunctions include but are certainly not limited to blindness, kidney failure, stroke, heart failure, and heart attack or cardiac arrest.

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