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Do Asian physicians manage hypertensive crisis properly? A Southeast Asia survey analysis

Abbas Alshami, Johanan Luna, America Avila, Salim Surani, Joseph Varon

Abstract

***Purpose*: Hypertension remains a common cause of morbidity and mortality worldwide, and proper management can prevent death. Over the last few decades, several changes in definitions, clinical manifestations, and management have occurred. We aimed to investigate the extent of knowledge about these changes, as the pertain to acute elevations of blood pressure among physicians in Southeast Asia.**

***Methods*: A cross-sectional survey was created and validated. The survey included 25 questions about the definitions of hypertensive urgencies and emergencies, clinical presentations, ideal rate of blood pressure reduction, and other questions. Surveys were distributed at the Asia Pacific Symposium held in Indonesia in August 2017. Descriptive analysis was conducted using IBM SPSS Statistics™ version 25.0 (IBM Corporation, Armonk, NY).**

***Results*: A total of 145 surveys were completed by physicians from India, Indonesia, South Korea, Philippines, Singapore, and Sri Lanka. Of them, only 49.6% (n=72) knew the normal blood pressure cut-off limits, and 19.3% (n=28) did not recognize the differences between hypertensive urgencies and emergencies. Moreover, 53.7% (n=78) of respondents was not aware that hypertensive urgency can be completely asymptomatic. Sixty-four point eight percent (n=94) indicated that acute cerebrovascular accidents were the most common end-organ damage from hypertensive emergencies. In addition, only 44.1% (n=64) were aware of the ideal rate of blood pressure reduction, and 50.3% (n=73) considered sublingual nifedipine as an appropriate choice in hypertensive crisis management.**

***Conclusions*: A significant percentage of physicians in Southeast Asia lack knowledge about hypertensive crisis definitions, clinical presentations, and management.**

Key words: Hypertensive crises, hypertensive urgency, hypertensive emergency, Asian, Southeast Asia, survey.

Introduction

Hypertension remains one of the most common causes of morbidity and mortality worldwide. (1) Uncontrolled hypertension that exceeds values of 180/120 mmHg, is considered a hypertensive crisis, and is divided into two main categories depending on whether there is concomitant end-organ damage (hypertensive emergency) or not (hypertensive urgency). (2)

Hypertensive crisis represents a challenging clinical entity. Its presentation is variable, commonly with non-specific symptoms (i.e. headache, dizziness, epistaxis, vomiting, or palpitations), and occasionally complaints such as chest pain, severe shortness of breath, focal neurological deficits, which may represent end-organ damage. (3) What is even more concerning is that many patients will present with absolutely no symptoms, and are incidentally discovered. (4) Moreover, hypertensive crisis can lead to devastating sequalae, including acute myocardial infarction, aortic dissection, cerebrovascular accidents (CVAs), acute congestive heart failure, and acute kidney injury among others. (5) Therefore, proper and timely recognition and management is crucial to prevent catastrophic

From Dorrington Medical Associates, PA, Houston, Texas, USA (Abbas Alshami, Johanan Luna, America Avila), University of Baghdad/College of Medicine, Baghdad, Iraq (Abbas Alshami), Universidad Xochicalco Campus Mexicali, Baja California, México (Johanan Luna), Universidad Durango Santander, Hermosillo, Sonora, México (America Avila), Texas A&M University, Health Science Center, Christus Spohn Hospital System, Corpus Christi, Bay Area Medical Center, Corpus Christi, Texas, USA (Salim Surani), and The University of Texas Health Science Center at Houston, The University of Texas Medical Branch at Galveston, United Memorial Medical Center/United General Hospital, Houston, Texas, USA (Joseph Varon).

Address for correspondence:
Joseph Varon, MD, FACP, FCCP, FCCM, FRSM
2219 Dorrington Street, Houston, Texas 77030, USA
Tel: +1-713-669-1670
Fax: +1-713-669-1671
Email: Joseph.Varon@uth.tmc.edu

consequences and reach favorable clinical outcomes.

In Asia, several studies have reported an increase in the incidence of hypertension and its complications (including hypertensive crisis), possibly due to diet changes concomitant with economic developments. (6-8) In this study, we aimed to explore the awareness of physicians in Southeast Asia on hypertensive crisis definitions, evaluation, and management.

Methods

Tool development and distribution

We created a 25 questions survey regarding current and updated definitions, presentation, and management of hypertensive crisis. These questions were based on accepted definitions and expert recommendations. (9) A total of 200 surveys were distributed to physicians from Southeast Asia countries (such as India, Indonesia, South Korea, Philippines, Singapore, and Sri Lanka) at the 24th Asia Pacific Symposium on Critical Care and Emergency Medicine held in Kuta, Bali, Indonesia in August 2017. Physicians were given the surveys on arrival to the congress and instructed to drop the surveys in a box at the end of the conference. As there were no personal identifiers, there was no follow up of initial non-respondents.

Statistical analysis

Responses were transformed into dichotomous responses of yes/knows for the right answers and no/does not know for the wrong answers. Statistical analysis was performed using the IBM SPSS Statistics™ version 25.0 (IBM Corporation, Armonk, NY).

Results

A total of 145 surveys were completed (72.5%) by Southeast Asia physicians. Demographics features included gender, specialty, and years of practice (**Table 1**). There were 95 (65.5%) males, 48 females (33.1%), and 2 which did not select a gender (1.4%). The specialties practiced by the respondents included 26.2% anesthesia (n=38), 11% emergency medicine (n=16), 1.4% family medicine (n=2), 0.7% infectious diseases (n=1), 10.3% internal medicine (n=15), 4.1% general surgery (n=6), 0.7% obstetrics/gynecology (n=1), and 2.8% multiple specialties (n=4). The number of years that physicians had practiced varied as well with 28.3% for 1-5 years (n=41), 37.2% for 5-10 years (n=54), 14.5% for 10-15 years (n=21), and 20% for >15 years (n=29). Fifty-two point four percent and 38.6% of respondents indicated that they had received an update on the current management of hypertensive crisis within 1 year and within 1-5 years, respectively. Furthermore, 94.5% (n=137) of them reported that they had managed hypertensive crisis in the recent past, and 30.3% (n=44) had treated more than 50 patients with these conditions.

Almost half of respondents (49.6%) were not aware what normal blood pressure cut-off values were. Fourteen point five percent (n=21) was unable to provide a definition of a hypertensive urgency properly, and 19.3% (n=28) could not recognize the difference between hypertensive urgencies and emergencies. In addition, 29% (n=42) of physicians firmly believed that an Asian background (race) was more prone to have hypertensive crisis than other races.

When asked about clinical presentations, 53.7% (n=78) of respondents did not enlist "asymptomatic" as a presentation for hypertensive urgencies, and 64.8% (n=94) chose acute cerebrovascular accidents as the most common end-organ damage from hypertensive emergencies. For the questions related to the management of hypertensive crisis, 42.1% (n=61) thought that mean arterial pressure (MAP) should be reduced by 21-25% in the first hour after diagnosing a hypertensive emergency, while 71.7% (n=104) believed that systolic blood pressure (SBP) of >200 mmHg in patients with an acute hemorrhagic stroke should be reduced modestly to <160 mmHg. Half of the respondents (50.3%, n=73) considered sublingual nifedipine an appropriate therapeutic agent in the management of hypertensive emergencies, and 29% (n=42) selected beta-adrenergic blocking agents as the choice in the management of hypertensive crisis due to a pheochromocytoma.

A subgroup analysis comparing responses of physicians who had treated more than 50 patients with those who had treated less than 50 patients, and results showed no statistically significant difference.

Discussion

Our survey aimed at understanding whether or not clinicians in Southeast Asia are familiar with terminology, clinical manifestations, and current accepted guidelines in the management of hypertensive crisis. Our respondents' specialties represent those primarily responsible for managing or encountering patients with hypertensive crisis in their practice. To our surprise, despite the fact that these clinicians see patients in their practice with hypertensive crisis, there was a substantial deficit in the knowledge on this topic.

Hypertension remains an incredible common clini-

cal entity across the world. (9) Given the prevalence and the lifetime risk of developing complications from chronic hypertension, cut-off values of systolic blood pressure (SBP) of ≤120 and diastolic (DBP) of ≤80 mmHg are considered as "normal" and, yet only half of respondents were aware of such values. This was surprising as it is clear that higher blood pressure values are associated with mortality and morbidity. (5,10) For example, Palmer and coinvestigators studied the effect of hypertension on stroke mortality risk, and found that the age-adjusted risk of death increased by 1% for every 1 mmHg increase in untreated SBP in both sexes, 3% increase for each 1 mmHg for untreated DBP in men, and 1% increase for each 1 mmHg increase in DBP in women. (11) We also found that a significant percentage of physicians completing this survey were unaware of the proper rate of reduction of blood pressure in hypertensive crisis. Indeed, 42.1% of respondents indicated that blood pressure should be reduced by 21-25% during the first hour after diagnosing a hypertensive emergency. Even though specific studies related to how fast blood pressure should be reduced are lacking in some instances, there are specific recommendations by key-opinion leaders in the field. Most authors recommend a reduction of 10-15% (maximally 20%) during that initial hour, as the such reduction rate achieves best outcome without compromising the organ's perfusion. (12) Not surprisingly, our survey indicated that the selection of the therapeutic medications in these cases had significant issues. Sublingual nifedipine, for example, has associated with unpredictable responses and has been reported to cause sudden hypotension, myocardial ischemia and even infarction due to coronary steal syndrome. (13) Indeed, most authors have pointed out that, in true hypertensive emergencies, nifedipine should be contraindicated. (2) In 1984, the Cardiorenal Advisory Committee of the Food and Drug Administration recommended against the use of nifedipine in hypertensive crisis. (14) More than 10 years later, the American Medical Association placed a moratorium on its use in this clinical entity. (15) Yet, in our study, more than 50% of respondents would use this agent in the treatment of a hypertensive emergency. Likewise, 29% of respondents considered beta-blockers drugs of choice in hypertensive emergencies due to pheochromocytoma, when in fact, they are contraindicated alone due to un-opposed α-receptors activation by catecholamines, and should only be used second to adrenergic blockade with α-blockers (i.e. phenoxybenzamine, doxazosin, etc.). (16)

Clearly the results of our survey can not be generalized. However, if the sample of respondents mimics what other clinicians know on this topic, this is a significant issue. Awareness of current definitions and recommendations in the management of hypertensive crisis is a prerequisite for caring for patients with these maladies. It appears that some basic pathophysiology understanding is of extreme importance among some clinicians in Southeast Asia. Educational programs directed towards these issues are needed. We found no statistically significant difference between answers of physicians who had treated >50 patients and those who had treated <50 patients, possibly indicating a lack of adequate continuing medical education on this specific topic.

Our study has several limitations. First, the small sample size may limit the generalizability of the study to physicians in Southeast Asia. Second, a large number of respondents were from Indonesia. Third, there is always a concern for the possibility of a language barrier.

Conclusions

Our data showed that there is a significant lack of knowledge on the definition, presentation, and management of hypertensive crisis among clinicians responding our survey in Southeast Asia. Given the increasing incidence of hypertension incidence in these countries, this can result in a suboptimal care of hypertensive crisis patients.

Conflicts of interests

Authors declare no conflicts of interest.

Acknowledgment

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Table 1. Demographics of respondents

Variable	Respondents, n (%)
Gender	
- Male	95 (65.5)
- Female	48 (33.1)
- Other	2 (1.4)
Specialty	
- Anesthesia	38 (26.2)
- Emergency medicine	16 (11)
- Family medicine	2 (1.4)
- Infectious diseases	1 (0.7)
- Internal medicine	15 (10.3)
- General surgery	6 (4.1)
- Obstetrics/gynecology	1 (0.7)
- Multiple specialties	4 (2.8)
Years in practice	
- 1-5	41 (28.3)
- 5-10	54 (37.2)
- 10-15	21 (14.5)
- >15	29 (20)

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