Hypertensive Crises

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KEYWORDS

• Blood pressure • Hypertension • Urgency • Emergency • Encephalopathy • Stroke

HOSPITAL MEDICINE CLINICS CHECKLIST

1. Blood pressure (BP) exists on a continuum ranging from hypotension to malignant hypertension (HTN).
2. An elevated BP reading should be confirmed by repeating it in different limbs.
3. Patients with elevated BP should be triaged as HTN urgency or emergency based on symptoms/signs/testing, and not merely based on absolute BP numbers.
4. Patients with HTN urgency can be managed outpatients with close follow-up, or as inpatients.
5. HTN emergencies are preferably managed in an intensive care unit setting.
6. In HTN emergency, prompt reduction of BP by about 25% in the first few hours is appropriate, except in patients with ischemic stroke, in whom BP reduction is not recommended unless it is very high. Aggressive reduction of BP is necessary in aortic dissection.
7. Choice of drug depends on clinical presentation/physical findings/laboratory testing.

DEFINITIONS

1. What is the definition of hypertensive crisis?

The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure[1] classifies 4 stages of blood pressure (BP):

- Normal BP: systolic BP (SBP) lower than 120 mm Hg and diastolic BP (DBP) lower than 80 mm Hg

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- Prehypertension: Prehypertension (pre-HTN) is defined as SBP 120 to 139 mm Hg or DBP 80 to 89 mm Hg
- Stage 1 hypertension (HTN): SBP 140 to 159 mm Hg or DBP 90 to 99 mm Hg
- Stage 2 HTN: SBP ≥160 mm Hg or DBP ≥100 mm Hg

HTN is defined as an SBP of 140 mm Hg or higher or DBP of 90 mm Hg or higher, measured on 2 or more occasions.[1] There is no consensus regarding a cutoff value to define hypertensive crisis, but it is often described as an SBP higher than 180 mm Hg or a DBP higher than 120 mm Hg.[2]

2. What are the different types of hypertensive crises, and how are they differentiated?

Hypertensive crisis can be further classified as a hypertensive urgency or hypertensive emergency, depending on the presence or absence of end-organ involvement:

- Hypertensive urgency is defined as an SBP higher than 180 mm Hg or a DBP higher than 120 mm Hg in the absence of, or minimal, target end-organ damage.[2]
- Hypertensive emergency is most consistently seen with a DBP higher than 120 mm Hg, which irrevocably causes end-organ damage including, but not limited to, the cardiac, renal, and central nervous systems.[3] It accounts for 25% to 30% of all hypertensive crises. The absolute BP elevation is not a necessary criterion for the diagnosis of HTN emergency as long as there is evidence of acute end-organ damage.

EPIDEMIOLOGY

1. What is the incidence and prevalence of hypertensive crisis in the United States and worldwide?

HTN affects an estimated 68 million (1 in 3 adult Americans).[4] About half (47%) of patients with high BP have their condition under control.[4] It is estimated that 1% to 2% of the HTN population will present with hypertensive crisis.[5] Nearly 3.2% of patients presenting to the emergency room have a hypertensive crisis. Zampaglione and colleagues[6] evaluated the prevalence of hypertensive crisis in an emergency department during a 12-month period and the frequency of end-organ damage during the first 24 hours after presentation. The investigators found 76% of the hypertensive crises to be hypertensive urgencies and 24% hypertensive emergencies, representing more than one-fourth of all medical urgencies/emergencies.

As with HTN, hypertensive crises are more prevalent in the elderly and the non-Hispanic black population. Men are affected 2 times more often than women.[7,8] Severe HTN is seen more frequently in noncompliant individuals, black men, persons of lower socioeconomic status, and the elderly.[9]

ETIOLOGY

1. What are the most frequent causes of hypertensive emergency and urgency?

Acute and severe BP elevation can occur as a complication of essential HTN, secondary HTN, or can happen de novo. In general, 8% of patients with hypertensive emergencies and 28% with hypertensive urgencies presenting to the emergency room are unaware of having a diagnosis of HTN.[9]