Hypertensive Emergencies

(An Approach to understand Hypertension emergencies/crisis: Emergency/urgency/accelerated/malignant)

When marked blood pressure elevation is associated with end organ damage; it is called hypertensive emergency-crisis/emergencies. Patients with hypertensive urgency will have an elevated blood pressure and can present asymptomatically or with relatively minor symptoms. Those symptoms are generally nonspecific and include headache, dizziness, dyspnea, anxiety, atypical chest pain, generalized weakness or numbness, and vague visual disturbances.

Patients with hypertensive urgency lack end-organ damage and can be treated with oral medications that gradually reduce BP to goal over a period of several hours to several days. Hypertensive emergencies, on the other hand, require intense monitoring in an ICU setting-and iv medications. Malignant hypertension and accelerated hypertension are both hypertensive emergencies, with similar outcomes and therapies. Malignant hypertension may or may not be associated with clinical conditions present in hypertensive urgency. A patient with malignant hypertension always has retinal papilledema and flame-shaped hemorrhages and exudates.
Clinical features of malignant hypertension may include encephalopathy, confusion, left ventricular failure, intravascular coagulation, and impaired renal function, with hematuria and weight loss. These patients develop fatal complications if untreated, and more than 90% will not survive beyond 1-2 years. Accelerated hypertension is defined as a recent significant increase over baseline BP that is associated with target organ damage. Hypertensive urgency must be distinguished from hypertensive emergency. Urgency is defined as severely elevated BP (ie, systolic BP >220 mm Hg or diastolic BP >120 mm Hg) with no evidence of target organ damage.

Hypertensive Emergency: Severe Hypertension where BP is > 180/110 mmHg with evidence of target organ damage:

1.Retinopathy / Retinal hemorrhage
2.Encephalopathy/I.C -morrhage/ IC tension.
3.Acute Pulm. Oedema, Myocardial-ischaemia/Aortic dissection.
4. Acute Renal Failure.

Medication of choice:

- **Myocardial Ischemia/ LVF** : NTG, Esmolol
- **Aortic Dissection** : Labetalol
- **Acute Renal Failure** : Fenoldopam /Nicardipine
- **Hyper-adrenergic states : due to sympathomimetic drugs** : Benzodiazepines.
- **.Pheo chromocytoma : Phentolamine**

In Neurologic emergencies: Rapid BP reduction is indicated, such as in hypertensive encephalopathy, acute ischemic stroke, acute intracerebral hemorrhage, and subarachnoid hemorrhage.
In hypertensive encephalopathy, the treatment guidelines are to reduce the MAP 25% over 8 hours. Labetalol, nicardipine, esmolol are the preferred medications; nitroprusside and hydralazine should be avoided.
In acute ischemic stroke, the preferred medications are labetalol and nicardipine. Withhold antihypertensive medications unless the SBP is >220 mm Hg or the DBP is >120 mm Hg, UNLESS the patient is receiving IV or intra-arterial (IA) fibrinolysis; then, the goal BP is an SBP of < 185 mm Hg and DBP < 110 mm Hg. After treatment with fibrinolysis, the SBP should be maintained < 180 mm Hg and the DBP at < 105 mm Hg for 24 hours.For acute intracerebral hemorrhages, the preferred medications are labetalol, nicardipine, and esmolol; avoid nitroprusside and hydralazine. The treatment is based on clinical/radiographic evidence of increased intracranial pressure (ICP). If there are signs of increased ICP, maintain the MAP just below 130 mm Hg (or SBP < 180 mm Hg) for the first 24 hours after onset. In patients without increased ICP, maintain the MAP < 110 mm Hg (or SBP < 160 mm Hg) for the first 24 hours after symptom onset.
In subarachnoid hemorrhage, nicardipine, labetalol, and esmolol are also the preferred agents; again, nitroprusside and hydralazine should be avoided. Maintain the SBP < 160 mm Hg until the aneurysm is treated or cerebral vasospasm occurs. Although oral nimodipine is used to prevent delayed ischemic neurologic deficits, it is NOT indicated for treating acute hypertension.
In Cardiovascular emergencies: Rapid BP reduction is also indicated in cardiovascular emergencies, such as aortic dissection, acute coronary syndrome, and acute heart failure. In aortic dissection, the preferred medications are labetalol, nicardipine, nitroprusside (with beta-blocker), esmolol, and morphine sulfate. However, avoid beta-blockers if there is aortic valvular regurgitation or suspected cardiac tamponade. Maintain the SBP at < 110 mm Hg, unless signs of end-organ hypoperfusion are present. The preferred treatment includes a combination of narcotic analgesics (morphine sulfate), beta blockers (labetalol, esmolol), and vasodilators (nicardipine, nitroprusside). Calcium channel blockers (verapamil, diltiazem) are an alternative to beta blockers. For acute coronary syndrome, beta blockers and nitroglycerin are the preferred drugs. Treatment is indicated if the SBP is >160 mm Hg and/or the DBP is >100 mm Hg. Reduce the BP by 20-30% of baseline. Note that thrombolytics are contraindicated if the BP is >185/100 mm Hg.
In Cocaine toxicity/pheochromocytoma:Diazepam, phentolamine, and nitroglycerin/nitroprusside are the preferred drugs. Pheochromocytoma treatment guidelines are similar to that of cocaine toxicity. Only after alpha blockade can beta blockers be added for BP control.
In Preeclampsia/eclampsia: The preferred medications are hydralazine, labetalol, and nifedipine. Avoid -Nitroprusside, angiotensin-converting enzyme inhibitors, esmolol. In women with eclampsia or preeclampsia, the SBP should be < 160 mm Hg and the DBP should be < 110 mm Hg in the antepartum and intrapartum periods.