Foundations Frameworks

Approach to Hypertension

Author: Quentin Reuter, MD
Editors: Colleen Hickey, MD; Kristen Grabow Moore, MD, MEd

1. **Evaluate for HTN Emergency:**
   - Hypertensive Emergency: SBP > 180, elevated BP causing end organ damage
   - Hypertensive Urgency: SBP > 180, but elevated BP *not* causing end organ damage
   - Evaluate for end organ damage to rule out hypertensive emergency:
     a. Brain: ICH, PRES, encephalopathy
     b. Eyes: vision changes, check acuities, consider evaluation for flame hemorrhages, papilledema
     c. Cardiac: AMI, dissection, cardiac strain leading to EKG changes, elevated troponin/BNP
     d. Pulm: pulmonary edema (associated w/ diastolic failure)
     e. Renal: AKI (5% of asymptomatic patients have AKI, may guide urgency of f/u or lead to admission if severe)

2. **Treatment:**
   - Typically want to reduce BP by approximately 20-25%
   - Note that in certain circumstances (aortic dissection, intracranial hemorrhage) the BP goals are much more aggressive
   - Treatment options depend on presence of end organ damage:
     a. HTN Emergency
        i. Labetalol 10 mg IV push, then double every 10-15 min (peak effect 5-15 min)
        ii. Hydralazine 10-20 mg IV push, onset 10-80 min, half-life 3-4 hrs
        iii. Nitroglycerin sublingual (SL) (400 mcg/tab → 1-2 tabs every 5 minutes) or drip (start at 80-160 mcg/min to match SL dosing) - effective in flash pulmonary edema, AMI
        iv. Nicardipine gtt (start at 5 mg/hr and titrate), consider placing arterial line
     b. HTN Urgency
        i. Hydralazine 10 mg PO or IV
        ii. Labetalol 10-20 mg IV
        iii. Lisinopril 10-20 mg PO
        iv. Clonidine 100 mcg + Amlodipine 5mg: clonidine reduces BP quickly, home with amlodipine for long term control
        v. HCTZ 12.5-25 mg
        vi. Restart home meds
        vii. Nothing

3. **Dispo/Prescriptions:**
     a. HTN Emergency: admit for BP control
     b. HTN Urgency: discharge home with prescription for antihypertensive
        i. JNC 8 recommends ACE, Thiazide, CCB, ARB as first line (thiazide or CCB in African Americans)
        ii. Amlodipine: safe (only relative contraindication is CHF), inexpensive ($4), good first line option in most patients

iii. HCTZ: bad for glycemic control, can cause electrolyte and liver abnormalities
iv. ACE/ARB: generally safe except in woman who may get pregnant
v. Nothing: can let PCP make decision
vi. ACEP 2013 Clinical Policy states you don't have to prescribe meds from the ED but may consider this in patients with poor follow-up (note that starting meds in the ED leads to better BPs at next visit)

References:

- Elliot, WJ, Varon, J. Evaluation and Treatment of Hypertensive Emergencies in Adults. Last Updated: Aug 16, 2016. Uptodate.com
- Uptodate.com: Medication references for: amlodipine, clonidine, hydralazine, hydrochlorothiazide, labetalol.
- Klinkhammer, MD. Hypertension in the ED. Emergency Medicine. 444-453. October 2016