Hypertension Workshop: Difficult Cases

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Case 1
Initial Visit

• 58-year old AA women presents for initial physical exam
• She denies any medical issues, feels well, and is new to town
• Last exam was 3 yrs ago; was told that her BP was “borderline high” but does not remember the value.

• Personal history
  – Nonsmoker, nondrinker
  – Weight has increased over the past 3 years
  – On no medications
  – Does not regularly exercise

• Family history
  – Mother with diabetes and hypertension at age 60, died with HF at 73.
  – Does not know her father’s medical history
  – Only child
  – 2 children (35 and 33) both alive and well
Case Study 1
Physical Examination

- BP: 158/98 mm Hg (averaged x 3), sitting
- Weight: 170 lb
- Height: 63 in
- Resting pulse: 76 beats/min
- BMI: 31 kg/m$^2$
- Waist: 37 in
- Eyegrounds-without hemorrhages or exudates, slight arteriolar narrowing
- Cardiac and peripheral artery exam: normal
- Lower extremity edema: None

BP=blood pressure; BMI = body mass index
Case 1
Laboratory

FBS: 105 mg/dL
TC 209 mg/dL
HDL-C: 45 mg/dL
LDL-C: 123 mg/dL
TG: 205 mg/dL
eGFR: 84 cc/min
A1C: 6.0

ALT: 50 u/L
TSH: normal
EKG: normal

ALT = amino alanine transferase.;  EKG = electrocardiogram;  TC = total cholesterol
LDL-C = low-density lipoprotein cholesterol;  HDL-C = high-density lipoprotein cholesterol;
TG = triglycerides;  FBS = fasting blood sugar;  TSH = thyroid stimulating hormone;
eGFR = estimated glomerular filtration rate;  A1C = hemoglobin A1C.
Case 1
Questions?

• Would you order any additional tests?
  If so, what would you order and when questioned by the patient, what evidence-base would you give her for why the test was ordered?
In addition to lifestyle changes, with what would you treat her Blood pressure?

1) Thiazide diuretic
2) BB
3) ACE inhibitor or ARB
4) CCB
5) Combination Rx
Case 2

- 63 year old white male referred for resistant hypertension and seen November 11, 2013.

- Hypertension began 10 years ago and he has always been on antihypertensive medications. Originally controlled on 1-2 medications, BP has been poorly controlled (living in Texas and South Carolina) over the past several years and required more medication.

- No hx of angina, heart failure, kidney disease, diabetes, or hospitalization for hypertension. He has no hx of clinical stroke but he was told an MRI showed questionable some evidence of a mini-stroke.
Case 2

- He checks his BP at home using a Walgreens device called Homedics. In the clinic his systolic BP was similar to our Omron device at 152 vs 155 mm Hg.

- At home, from 10/22/13 thru 11/11/13 BP’s have been running from 149-173/66-79 mm Hg.
Case 2

- He does not drink alcohol nor smoke cigarettes but he smoked cigars and stopped 1.5 years ago.
- He doesn't exercise and has taken a new job as a pharmacist requiring long hours.
- He is avoiding salt in his diet as an additive.
- No sx of sleep apnea according to his wife who is here with him for this first exam.
- He is currently on 4 medications, the most he has ever been on for his htn: lisinopril 40 bid 7 am and 7 pm, nebivolol 10 mg bid, amlodipine 10 mg qd (without ankle edema-most recently added 6 weeks ago) and clonidine 0.3 mg tid (7 am, 2 pm, 7 pm).
Case 2

- He had a renal scan in Texas which showed no evidence of RAS. I am not aware of the carotid duplex scan.

- Labs 8 months ago-total cholesterol 151, LDL-C 90, HDL-C 42, Trig 93. NI LFT's, NI TSH 0.534, creat 0.85 with sodium 136, potassium 4.2.

- 10/24/13 sodium 138, potassium 3.8, chloride 99, CO2 23, glucose 105, creat 0.77.
  
  Plasma renin 0.15 ng/nl/hr
  Plasma aldosterone 4.2 ng/dl.
Case 2

- His weight today is 157.6 pounds at 5 feet 10 inches.

- BP: 147/75  Pulse: 44  Resp: 18

- BP
  - 152/76  Pulse 43
  - 147/75  44
  - 142/76  45

- General appearance - alert, well appearing, and NAD

- Head; normocephalic, atraumatic. Eye exam - pupils equal and reactive, extraocular eye movements intact, fundoscopic with R> L cataract but eyeground changes benign with arteriolar narrowing but without hemorrhages or exudates.
Case 2

- **CVS exam:** normal rate, regular rhythm, normal S1, S2, no murmurs, rubs, or gallops

- **Chest:** clear to auscultation, no wheezes, rales or rhonchi, symmetrical air entry

- **Abdominal exam:** soft, non-tender, non-distended, no masses or organomegaly

- **Extremities:** peripheral pulses normal, no pedal edema, no clubbing or cyanosis
Question for Case 2

- Currently on lisinopril 40 bid
  nebivolol 10 mg bid
  amlodipine 10 mg qd
  clonidine 0.3 mg tid

Which antihypertensive would you try and stop?

1) BB
2) ACE inhibitor
3) CCB
4) Clonidine
5) More than One
Which antihypertensive would you add?

1) Thiazide diuretic
2) ARB
3) Alpha Blocker
4) Spironolactone
5) More than 1
Case 3
Initial Visit

-A 61 year old African-American female, new patient, presented to the clinic for a prescription refill for hypertension.

-She reported having intermittent dull headaches 3/10 for the past several days. She also stated having intermittent tingling 2 days ago in both hands-right hand greater but it only lasted seconds, and has not returned.

-Past Medical History: long standing hypertension x 40 years. States she is currently prescribed atenolol 50mg po daily and lisinopril/hctz 10/12.5 mg po daily. Denied taking any other medications.
Case 3
Past Medical History

- **Family history**: mother - CAD, HTN.
- **Social history**: quit smoking 25 years ago. She denies alcohol consumption. She is unemployed and without insurance (initially had trouble getting on the ACA web site and just gave up).
- **ROS**: Denied weight change, fever, SOB, chest pain, palpitation, dizziness, cognitive changes, abdominal pain, n/v, weakness, fatigue, edema, or change in urine or bowel habits.
Case 3
Physical exam
• A/O x3. BP 186/110 r arm sitting, pulse 82, not orthostatic
• HEENT: unremarkable without facial drooping or weakness, fundus flat, w/o h or exudates
• Neck: no mass, normal trachea, no lymphadenopathy, no thyromegaly.
• Resp: normal respiratory effort, clear bilaterally
• CV: regular rate, PMI not displaced, no murmurs, gallops, or rubs
• Abdomen: BS present x 4, soft, non-tender, no organomegaly
• Pedal pulses 2+ bilateral, no edema noted
• Neuro: oriented x 4, normal gait, nl ROM. CN2-12 wnl, coordination and sensation intact. Strength 5/5 in all groups w/o weakness or drift.
Case 3
Laboratory

FBS: 96 mg/dL
Sodium 137
Potassium 4.8
Creatinine 1.2  (eGFR: 56 cc/min)
A1C: 6.0
Tsh 3.6

ALT: 30 u/L
EKG-NSR, LVH, O/W nml
What is the most likely diagnosis in this patient?

1) Severe Asymptomatic Stage 2 hypertension
2) Hypertensive Urgency
3) Hypertensive Emergency
4) Pheochromocytoma
5) Fibromuscular Dysplasia
Case 3
Questions?

- In addition to lifestyle changes, with what would you treat her Blood pressure?
  1) Nifedipine po 10 mg now.
  2) Clonidine 0.1 mg po q hr x 3 then start two medications and send home
  3) Admit to the hospital for IV fenoldapam
  4) Give 80 mg lasix IM and begin amlodipine. Follow-up in 1 week
  5) Give Combination Rx with an ACE/CCB, fill the medication, and see back in 24-48 hours.

Case 4

• 73-year-old female with hypertension and no other underlying disease presents with angioedema. She has been on enalapril and hydrochlorothiazide for the past 4 years. Her BP is 118/72 mm Hg in the office. She has never had a similar episode.
Case 4
Questions

What is the next best step in management?

1) Keep the regimen the same. Her angioedema was not caused by the ACE inhibitor as she has been on it for the past four years and has never had this before.

2) With excellent control, just substitute lisinopril for enalapril as this is less likely to cause angioedema.

3) With excellent control on an ACE inhibitor, substitute an ARB for the enalapril.

4) Substitute metoprolol for the enalapril.
Case 5

- 24 year old AA Female who has had controlled hypertension in the past is referred by her gynecologist for a sudden increase in hypertension (190/120mmHg).

- She reports that she was diagnosed with hypertension just after completing high school and it has been well controlled in the past. She denies daytime somnolence, headaches, neurologic symptoms, or chest pain.

- She is compliant with HCTZ 25mg qd and amlodipine 10mg qd, does not use excess salt, and takes no over the counter medications.

- She does not smoke nor drink. She does not have a family history of hypertension.
Case 5

- Physical examination reveals a slightly obese (BMI 30) female with a BP of 192/108 mmHg. There is no papilledema. She does have an S4, no murmurs, gallops, or rubs. Oriented x 4, her neurologic exam is non-focal. No other abnormalities are noted.

- Serum chemistries are normal with a sodium of 138, potassium of 4.1, and her serum creatinine is 1.4. Urinalysis is negative for protein, but she does have microalbuminuria (45mg/g creatinine). Urine pregnancy test is negative.

- EKG reveals probable LVH.
Question for Case 5

• Which of the following is the most appropriate course of action?
  1) Add an ACE inhibitor or ARB
  2) Order a 24-hr ABPM
  3) Order a sleep study in this obese female
  4) Consider a secondary cause of hypertension
Case 6

• S.L. is a 83-year-old white man with a long history of hypertension who presents to your office for evaluation of his hypertension.

• He is currently off of his lisinopril which caused a cough.

• He is taking hydrochlorothiazide 25 mg/day alone for his BP.
Case 6

- Weight: 186 lbs.
- BMI: 26.9 kg/m\(^2\)
- Waist circumference: 34”
- Office blood pressure:
  - Sitting 177/71 mmHg (average of three readings)
  - Standing 176/70 mmHg (average of three readings)
- Out-of-office blood pressure: 174/72 mmHg (average of three readings done for one week at various times of the day for one month)
Case 6: Laboratory Results

- Fasting blood glucose: 104 mg/dl
- Potassium: 3.9 mmol/L
- Serum creatinine: 1.2 mg/dL
- eGFR: 70 mL/min/1.73m²
- Fasting lipoprotein profile: Total-C 157 mg/dl; LDL-C 90 mg/dl; triglycerides 174 mg/dl, HDL-C 32 mg/dl
- EKG: Normal sinus rhythm; definite left ventricular hypertrophy
- Urinalysis: Normal; no evidence of proteinuria
1) Are additional tests required to further stratify this patient’s risk?
2) How would you classify this patient’s elevated blood pressure?
Question for Case 6

3) What goal BP would you try to achieve?

1) < 130/80 mm Hg
2) < 140/90 mm Hg
3) < 150/90 mm Hg
4) < 120/80 mm Hg
5) None of the above
4) Should you treat this patient with pharmacologic therapy? Is it harmful to treat him at this age? What would you use as he is already on HCTZ 25 mg qd?