



Hypertension

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Objectives

- Briefly introduce working definitions of hypertension and review its importance
- Review the 9 recommendations of JNC 8
- Prepare for your examination by exposing y'all to hypertension question (and answers) from the ABFM 2013 ITE

Outline

- I. Case Study
- II. Exam Question
- III. Essential Hypertension, JNC 7 & JNC 8
- IV. Exam Answers

Case Study

HPI: 54 y/o generally healthy Caucasian male was noted to have elevated BPs during a recent ER visit for a hand injury. BPs were also elevated at the hand surgeon's office and at the outpatient surgery center. Previously he has been a blood donor and was noted to have BPs of 110-120/70-80 when he donated about 5 times per year.

54 y/o male

- BP Readings

- 6/20/14 134/80 In ER Triage
- 129/83 Later in ER
- 6/23/14 146/86 Office
- 7/3/14 137/94 Pre-op
- 8/7/14 134/96 Office

54y/o

More HPI

Has been a runner for years but due to a job change and relocation, had not been running since May. Has gained 15 lbs due to not running and enjoying south Louisiana cuisine! Has been running again for about 2 months but has not lost any weight. Feels well w/ no chest pain while he's running.

54 y/o W male

- Allergies NKMA
- Medication Ketotifen eye gtts prn
Triamcinolone nasal spray prn
Loratidine 10mg prn
Lansoprazole 15mg (3x/week)
Aspirin 81mg daily (almost)
- PMH Seasonal Allergies
GERD
Colonic adenomas

54 y/o male

- PSH
 - age 3 Umbilical and bilateral inguinal hernia repairs
 - age 50 L knee arthroscopy, medial meniscectomy
- FH
 - Father MI 57y/o (smoker), AAA, Lung CA 72y/o (alive and working @ 79y/o)
 - Mother Asthma, PE, DJD
 - Brother Keratoconus
 - Children A&W

54 y/o w/ ↑BP

- SH Married, Employed full time, never smoked, EtOH: 6-12 beers/WE, caffeine 2c coffee/day, no recreational drugs
- ROS R ear pops, palpitations and UE tremor w/ too much caffeine, R 1st MTP aching pain (mild)

54 y/o male PE

General: NAD, appears stated age

Vitals: BP 142/92 LAS; P 56, regular; Ht 5'7";

Wt 183lbs; BMI 28.7

Neck: No JVD, normal carotid pulses, no bruits, no thyromegaly

Lungs: CTA&P

CV: RRR, normal S1,S2, no murmurs or gallops

Abd: Overweight, soft, non-tender, no bruits

Ext: No edema, normal pulses

54y/o male

- Does he have hypertension?
- Should he be treated?
- If yes, then should his treatment include medication?

Questions

24. A postmenopausal female who has recently been diagnosed with hypertension returns for follow-up 3 months after the initiation of therapeutic lifestyle changes. Her blood pressure has improved but remains higher than goal at 142/90 mm Hg, and pharmacologic treatment is indicated. The patient has a family history of osteoporosis.

- Which one of the following may slow the demineralization of bone in this patient?
- A) An ACE inhibitor
- B) An α -blocker
- C) A β -blocker
- D) A calcium channel blocker
- E) A thiazide diuretic

27. A 58-year-old male has a history of type 2 diabetes mellitus that is not well controlled. He has recently developed mild hypertension that has not been controlled by lifestyle changes. You prescribe lisinopril (Prinivil, Zestril), 20 mg daily, for the hypertension and 2 months later you note that his serum creatinine level has increased from 1.25 mg/dL to 1.5 mg/dL (N 0.64–1.27) and his blood pressure has decreased from 142/88 mm Hg to 128/78 mm Hg.

Which one of the following should you do now?

- A) Continue the current dosage of lisinopril
- B) Decrease the dosage of lisinopril to 10 mg
- C) Increase the dosage of lisinopril to 40 mg
- D) Discontinue lisinopril and initiate chlorthalidone
- E) Discontinue lisinopril and initiate losartan (Cozaar)

93. A 55-year-old male has New York Heart Association class III chronic systolic heart failure due to hypertensive cardiomyopathy. Which one of the following is CONTRAINDICATED in this patient?

- A) Carvedilol (Coreg)
- B) Digoxin
- C) Ramipril (Altace)
- D) Spironolactone (Aldactone)
- E) Verapamil (Calan)

144. A 55-year-old male with a 4-year history of type 2 diabetes mellitus was noted to have microalbuminuria 6 months ago, and returns for a follow-up visit. He has been on an ACE inhibitor and his blood pressure is 140/90 mm Hg. The addition of which one of the following medications would INCREASE the likelihood that dialysis would become necessary?

- A) Hydrochlorothiazide
- B) Amlodipine (Norvasc)
- C) Atenolol (Tenormin)
- D) Clonidine (Catapres)
- E) Losartan (Cozaar)

188. An 11-year-old male is brought to your clinic for follow-up after a recent well child visit revealed elevated blood pressure. The parents have restricted his intake of sodium and fatty foods during the last several weeks. His blood pressure today is 140/92 mm Hg, which is similar to the reading at his last visit. The parents checked the child's blood pressure with a home unit several times and found it consistently to be in the 130s systolic and low 80s diastolic. The child had a normal birth history and has no known chronic medical conditions. Both of his parents and his two younger siblings are healthy. He is at the 75th percentile for both height and weight with a BMI in the normal range. He eats a balanced diet and is active.

What should be the next step for this patient?

- A) Reassurance that this is likely white-coat hypertension
- B) A goal weight loss of at least 5 lb
- C) Evaluation for causes of secondary hypertension
- D) Hydrochlorothiazide
- E) Lisinopril (Prinivil, Zestril)

201. For several years, a hypertensive 65-year-old female has been treated with hydrochlorothiazide, 25 mg/day; atenolol (Tenormin), 100 mg/day; and hydralazine, 50 mg 4 times/day. Her blood pressure has been well controlled on this regimen. Over the past 2 months she has experienced malaise, along with diffuse joint pains that involve symmetric sites in the fingers, hands, elbows, and knees. A pleural friction rub is noted on examination. Laboratory testing shows that the patient has mild anemia and leukopenia, with a negative rheumatoid factor and a positive antinuclear antibody (ANA) titer of 1:640.

Which one of the following would be the most appropriate INITIAL step?

- A) Replace hydrochlorothiazide with furosemide (Lasix)
- B) Discontinue hydralazine
- C) Start prednisone, 40 mg/day orally
- D) Start hydroxychloroquine (Plaquenil), 400 mg/day
- E) Order renal function studies and anticipate that a renal biopsy will be needed

221. A 54-year-old male sees you for a 6-month follow-up visit for hypertension. He feels well, but despite the fact that he takes his medications faithfully, his blood pressure averages 150/90 mm Hg. He has had an intensive workup for hypertension in the recent past, with normal repeat laboratory results, including a CBC, serum creatinine, an electrolyte panel, and a urinalysis. His medications include chlorthalidone, 12.5 mg daily; carvedilol (Coreg), 25 mg twice daily; amlodipine (Norvasc), 10 mg daily; and lisinopril (Prinivil, Zestril), 40 mg daily. He has been intolerant to clonidine (Catapres) in the past.

Which one of the following medication changes would be most reasonable?

- A) Adding isosorbide mononitrate (Imdur)
- B) Adding spironolactone (Aldactone)
- C) Substituting furosemide (Lasix) for chlorthalidone
- D) Substituting losartan (Cozaar) for lisinopril

Hypertension-Who Cares?

- Family Doctors: Hypertension is the most common reason for office visits in the United States.
- Drug companies: HTN is also the most common reason for the use of prescription drugs.
- Americans: 30% of them/us (~60 million!) have it. As we get older and fatter, this number will get worse.

Hypertension-So what?

- Approximately half of hypertensive people have their BP controlled (<140/90)
- Hypertension is a risk factor for: CAD, CHF, LVH, CVA (ischemic and bleeding), CKD

Hypertension-Modifiable Risk Factors

- Obesity
- Inactivity
- Excessive Alcohol Intake
- Excessive Sodium Intake
- Smoking
- Dyslipidemia (independent of obesity)
- Medications (NSAIDs, venlafaxine, decongestants)
- Obstructive Sleep Apnea

Hypertension-Risk Factors Not Modifiable

- Race: HTN is more common and more severe in blacks
- Family History: Either parent
- Personality: hostile, impatient, depressed

JNC 1, January 1977

- Recommendations: (2 & 3 of 6)
- Virtually all patients with a diastolic pressure of 105 mm Hg or greater should be treated with antihypertensive drug therapy.
- For persons with diastolic pressures of 90-104 mm Hg, treatment should be individualized with consideration give to other risk factors.
- JAMA, Jan 17, 1977, Vol 237, no 3, pp 255-261

JNC 7 Definitions

Classification of Blood Pressure (BP)

Category: SBP mmHg /DBP mmHg

- Normal <120 and <80
- Prehypertension 120–139 or 80–89
- Hypertension, Stage 1 140–159 or 90–99
- Hypertension, Stage 2 ≥ 160 or ≥ 100

Malignant and Urgent Hypertension

- Malignant: Marked hypertension w/ retinal hemorrhages, exudates, or papilledema. May be associated w/ encephalopathy
- Hypertensive urgency: Severe hypertension (DBP>120) in an asymptomatic patient.

From: 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

JAMA. 2014;311(5):507-520. doi:10.1001/jama.2013.284427

Table 1. Comparison of Current Recommendations With JNC 7 Guidelines

Topic	JNC 7	2014 Hypertension Guideline
Methodology	Nonsystematic literature review by expert committee including a range of study designs Recommendations based on consensus	Critical questions and review criteria defined by expert panel with input from methodology team Initial systematic review by methodologists restricted to RCT evidence Subsequent review of RCT evidence and recommendations by the panel according to a standardized protocol
Definitions	Defined hypertension and prehypertension	Definitions of hypertension and prehypertension not addressed, but thresholds for pharmacologic treatment were defined
Treatment goals	Separate treatment goals defined for "uncomplicated" hypertension and for subsets with various comorbid conditions (diabetes and CKD)	Similar treatment goals defined for all hypertensive populations except when evidence review supports different goals for a particular subpopulation
Lifestyle recommendations	Recommended lifestyle modifications based on literature review and expert opinion	Lifestyle modifications recommended by endorsing the evidence-based Recommendations of the Lifestyle Work Group
Drug therapy	Recommended 5 classes to be considered as initial therapy but recommended thiazide-type diuretics as initial therapy for most patients without compelling indication for another class Specified particular antihypertensive medication classes for patients with compelling indications, ie, diabetes, CKD, heart failure, myocardial infarction, stroke, and high CVD risk Included a comprehensive table of oral antihypertensive drugs including names and usual dose ranges	Recommended selection among 4 specific medication classes (ACEI or ARB, CCB or diuretics) and doses based on RCT evidence Recommended specific medication classes based on evidence review for racial, CKD, and diabetic subgroups Panel created a table of drugs and doses used in the outcome trials
Scope of topics	Addressed multiple issues (blood pressure measurement methods, patient evaluation components, secondary hypertension, adherence to regimens, resistant hypertension, and hypertension in special populations) based on literature review and expert opinion	Evidence review of RCTs addressed a limited number of questions, those judged by the panel to be of highest priority.
Review process prior to publication	Reviewed by the National High Blood Pressure Education Program Coordinating Committee, a coalition of 39 major professional, public, and voluntary organizations and 7 federal agencies	Reviewed by experts including those affiliated with professional and public organizations and federal agencies; no official sponsorship by any organization should be inferred

Abbreviations: ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin receptor blocker; CCB, calcium channel blocker; CKD, chronic kidney disease; CVD, cardiovascular disease; JNC, Joint National Committee; RCT, randomized controlled trial

Figure Legend:

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JNC 8: Recommendations for the Management of Hypertension

Recommendation 1

In the general population aged ≥ 60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥ 150 mm Hg or diastolic blood pressure (DBP) ≥ 90 mm Hg and treat to a goal SBP < 150 mm Hg and goal DBP < 90 mm Hg. (Strong Recommendation – Grade A)

Corollary Recommendation

In the general population aged ≥ 60 years, if pharmacologic treatment for high BP results in lower achieved SBP (eg, < 140 mm Hg) and treatment is well tolerated and without adverse effects on health or quality of life, treatment does not need to be adjusted. (Expert Opinion – Grade E)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 2

In the general population <60 years, initiate pharmacologic treatment to lower BP at DBP \geq 90 mm Hg and treat to a goal DBP <90 mm Hg. (For ages 30-59 years, Strong Recommendation – Grade A; For ages 18-29 years, Expert Opinion – Grade E)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 3

In the general population <60 years, initiate pharmacologic treatment to lower BP at SBP \geq 140 mm Hg and treat to a goal SBP <140 mm Hg. (Expert Opinion – Grade E)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 4

In the population aged ≥ 18 years with chronic kidney disease (CKD), initiate pharmacologic treatment to lower BP at SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg and treat to goal SBP < 140 mm Hg and goal DBP < 90 mm Hg. (Expert Opinion – Grade E)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 5

In the population aged ≥ 18 years with diabetes, initiate pharmacologic treatment to lower BP at SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg and treat to a goal SBP < 140 mm Hg and goal DBP < 90 mm Hg. (Expert Opinion – Grade E)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 6

In the general nonblack population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic, calcium channel blocker (CCB), angiotensin-converting enzyme inhibitor (ACEI), or angiotensin receptor blocker (ARB).
(Moderate Recommendation – Grade B)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 7

In the general black population, including those with diabetes, initial antihypertensive treatment should include a thiazide-type diuretic or CCB. (For general black population: Moderate Recommendation – Grade B; for black patients with diabetes: Weak Recommendation – Grade C)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 8

In the population aged ≥ 18 years with CKD, initial (or add-on) antihypertensive treatment should include an ACEI or ARB to improve kidney outcomes. This applies to all CKD patients with hypertension regardless of race or diabetes status. (Moderate Recommendation – Grade B)

JNC 8: Recommendations for the Management of Hypertension

Recommendation 9

The main objective of hypertension treatment is to attain and maintain goal BP. If goal BP is not reached within a month of treatment, increase the dose of the initial drug or add a second drug from one of the classes in recommendation 6 (thiazide-type diuretic, CCB, ACEI, or ARB). The clinician should continue to assess BP and adjust the treatment regimen until goal BP is reached. If goal BP cannot be reached with 2 drugs, add and titrate a third drug from the list provided. Do not use an ACEI and an ARB together in the same patient. If goal BP cannot be reached using only the drugs in recommendation 6 because of a contraindication or the need to use more than 3 drugs to reach goal BP, antihypertensive drugs from other classes can be used. Referral to a hypertension specialist may be indicated for patients in whom goal BP cannot be attained using the above strategy or for the management of complicated patients for whom additional clinical consultation is needed. (Expert Opinion – Grade E)

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Table 4. Evidence-Based Dosing for Antihypertensive Drugs

Antihypertensive Medication	Initial Daily Dose, mg	Target Dose in RCTs Reviewed, mg	No. of Doses per Day
ACE inhibitors			
Captopril	50	150-200	2
Enalapril	5	20	1-2
Lisinopril	10	40	1
Angiotensin receptor blockers			
Eprosartan	400	600-800	1-2
Candesartan	4	12-32	1
Losartan	50	100	1-2
Valsartan	40-80	160-320	1
Irbesartan	75	300	1
β-Blockers			
Atenolol	25-50	100	1
Metoprolol	50	100-200	1-2
Calcium channel blockers			
Amlodipine	2.5	10	1
Diltiazem extended release	120-180	360	1
Nitrendipine	10	20	1-2
Thiazide-type diuretics			
Bendroflumethiazide	5	10	1
Chlorthalidone	12.5	12.5-25	1
Hydrochlorothiazide	12.5-25	25-100 ^a	1-2
Indapamide	1.25	1.25-2.5	1

Abbreviations: ACE, angiotensin-converting enzyme; RCT, randomized controlled trial.
^aCurrent recommended evidence-based dose that balances efficacy and safety is 25-50 mg daily.

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Questions

24. A postmenopausal female who has recently been diagnosed with hypertension returns for follow-up 3 months after the initiation of therapeutic lifestyle changes. Her blood pressure has improved but remains higher than goal at 142/90 mm Hg, and pharmacologic treatment is indicated. The patient has a family history of osteoporosis.

- Which one of the following may slow the demineralization of bone in this patient?
- A) An ACE inhibitor
- B) An α -blocker
- C) A β -blocker
- D) A calcium channel blocker
- E) A thiazide diuretic

24. ANSWER: E

An adult patient with a confirmed systolic blood pressure >139 mm Hg or a diastolic blood pressure >89 mm Hg is hypertensive. JNC-7 guidelines recommend the adoption of healthy lifestyles for all patients, especially those with hypertension, and the addition of pharmacologic treatment as necessary to reach a goal blood pressure $<140/90$ mm Hg. This goal blood pressure is further reduced to $<130/80$ mm Hg for patients who also have diabetes mellitus or renal disease. The same guidelines note that elevated systolic blood pressure is a much more important cardiovascular disease risk factor than diastolic blood pressure in persons older than age 50.

Medication is commonly required to reach the goal blood pressure, and most patients will often require two or more drugs. In the absence of compelling indications for use of a specific class of drugs, thiazide-type diuretics are recommended for initial treatment. Examples of compelling indications include ACE inhibitors for patients with heart failure, diabetes mellitus, or high coronary disease risk, or beta-blockers post myocardial infarction. The selection of an agent with favorable side benefits is recommended. Thiazide-type diuretics are useful in slowing demineralization from osteoporosis, making this the most appropriate choice for this patient.

Other examples of choosing drugs based on side benefits include β -blockers for patients with a history of migraine or tachycardia, calcium channel blockers for patients with Raynaud's syndrome, and α -blockers for patients with benign prostatic hyperplasia.

27. A 58-year-old male has a history of type 2 diabetes mellitus that is not well controlled. He has recently developed mild hypertension that has not been controlled by lifestyle changes. You prescribe lisinopril (Prinivil, Zestril), 20 mg daily, for the hypertension and 2 months later you note that his serum creatinine level has increased from 1.25 mg/dL to 1.5 mg/dL (N 0.64–1.27) and his blood pressure has decreased from 142/88 mm Hg to 128/78 mm Hg.

Which one of the following should you do now?

- A) Continue the current dosage of lisinopril
- B) Decrease the dosage of lisinopril to 10 mg
- C) Increase the dosage of lisinopril to 40 mg
- D) Discontinue lisinopril and initiate chlorthalidone
- E) Discontinue lisinopril and initiate losartan (Cozaar)

Item 27

ANSWER: A

ACE inhibitors such as lisinopril do not need to be discontinued unless baseline creatinine increases by >30%. (This patient's creatinine increased by 20%.) The current dosage of lisinopril is appropriate, as the blood pressure meets the diabetic goal of <130/80 mm Hg. Small increases in creatinine have been associated with long-term preservation of renal function, and may be a marker of changes in intraglomerular pressure.

Ref: Bakris GL, Weir MR: Angiotensin-converting enzyme inhibitor-associated elevations in serum creatinine: Is this a cause for concern? Arch Intern Med 2000;160(5):685-693. 2) Roett MA, Liegl S, Jabbarpour Y: Diabetic nephropathy—The family physician's role. Am Fam Physician 2012;85(9):883-889

93. A 55-year-old male has New York Heart Association class III chronic systolic heart failure due to hypertensive cardiomyopathy. Which one of the following is CONTRAINDICATED in this patient?

- A) Carvedilol (Coreg)
- B) Digoxin
- C) Ramipril (Altace)
- D) Spironolactone (Aldactone)
- E) Verapamil (Calan)

Item 93

ANSWER: E

ACE inhibitors and β -blockers improve mortality in heart failure (HF). Digoxin and furosemide improve symptoms and reduce hospitalizations in systolic HF, and furosemide may decrease mortality. Spironolactone, an aldosterone antagonist, reduces all-cause mortality and improves ejection fractions in systolic HF. Verapamil, due to its negative inotropic effect, is associated with worsening heart failure and an increased risk of adverse cardiovascular events.

144. A 55-year-old male with a 4-year history of type 2 diabetes mellitus was noted to have microalbuminuria 6 months ago, and returns for a follow-up visit. He has been on an ACE inhibitor and his blood pressure is 140/90 mm Hg.

The addition of which one of the following medications would INCREASE the likelihood that

dialysis would become necessary?

- A) Hydrochlorothiazide
- B) Amlodipine (Norvasc)
- C) Atenolol (Tenormin)
- D) Clonidine (Catapres)
- E) Losartan (Cozaar)

Item 144

ANSWER: E

Patients with diabetes mellitus, atherosclerosis, and end-organ damage benefit from ACE inhibitors and angiotensin receptor blockers (ARBs) equally when they are used to prevent progression of diabetic nephropathy. Combining an ACE inhibitor with an ARB is not recommended, as it provides no additional benefit and leads to higher creatinine levels, along with an increased likelihood that dialysis will become necessary

188. An 11-year-old male is brought to your clinic for follow-up after a recent well child visit revealed elevated blood pressure. The parents have restricted his intake of sodium and fatty foods during the last several weeks. His blood pressure today is 140/92 mm Hg, which is similar to the reading at his last visit. The parents checked the child's blood pressure with a home unit several times and found it consistently to be in the 130s systolic and low 80s diastolic. The child had a normal birth history and has no known chronic medical conditions. Both of his parents and his two younger siblings are healthy. He is at the 75th percentile for both height and weight with a BMI in the normal range. He eats a balanced diet and is active.

What should be the next step for this patient?

- A) Reassurance that this is likely white-coat hypertension
- B) A goal weight loss of at least 5 lb
- C) Evaluation for causes of secondary hypertension
- D) Hydrochlorothiazide
- E) Lisinopril (Prinivil, Zestril)

Item 188

ANSWER: C

The Fourth Report on the Diagnosis, Evaluation, and Treatment of High Blood Pressure in Children and Adolescents defines hypertension in children as a systolic or diastolic blood pressure above the 95th percentile for the patient's sex, age, and height on several different readings. Although it is appropriate to have this finding confirmed in the outpatient setting, 130 mm Hg is still at the 99th percentile for systolic blood pressures in this patient. Hypertension in a patient this young should prompt a search for secondary causes, which are more common in young hypertensive patients than in adults with hypertension. The recommended workup includes blood and urine testing, as well as renal ultrasonography. An evaluation for end-organ damage is also recommended, including retinal evaluation and echocardiography.

201. For several years, a hypertensive 65-year-old female has been treated with hydrochlorothiazide, 25 mg/day; atenolol (Tenormin), 100 mg/day; and hydralazine, 50 mg 4 times/day. Her blood pressure has been well controlled on this regimen. Over the past 2 months she has experienced malaise, along with diffuse joint pains that involve symmetric sites in the fingers, hands, elbows, and knees. A pleural friction rub is noted on examination. Laboratory testing shows that the patient has mild anemia and leukopenia, with a negative rheumatoid factor and a positive antinuclear antibody (ANA) titer of 1:640.

Which one of the following would be the most appropriate INITIAL step?

- A) Replace hydrochlorothiazide with furosemide (Lasix)
- B) Discontinue hydralazine
- C) Start prednisone, 40 mg/day orally
- D) Start hydroxychloroquine (Plaquenil), 400 mg/day
- E) Order renal function studies and anticipate that a renal biopsy will be needed

Item 201

ANSWER: B

There are many drugs that can induce a syndrome resembling systemic lupus erythematosus, but the most common offenders are antiarrhythmics such as procainamide. Hydralazine is also a common cause. There is a genetic predisposition for this drug-induced lupus, determined by drug acetylation rates. Polyarthritits and pleuropericarditis occur in half of patients, but CNS or renal involvement is rare. While all patients with this condition have positive antinuclear antibody titers and most have antibodies to histones, antibodies to double-stranded DNA and decreased complement levels are rare, which distinguishes drug-induced lupus from idiopathic lupus. The best initial management for drug-induced lupus is to withdraw the drug, and most patients will improve in a few weeks. For those with severe symptoms, a short course of corticosteroids is indicated. Once the offending drug is discontinued, symptoms seldom last beyond 6 months.

221. A 54-year-old male sees you for a 6-month follow-up visit for hypertension. He feels well, but despite the fact that he takes his medications faithfully, his blood pressure averages 150/90 mm Hg. He has had an intensive workup for hypertension in the recent past, with normal repeat laboratory results, including a CBC, serum creatinine, an electrolyte panel, and a urinalysis. His medications include chlorthalidone, 12.5 mg daily; carvedilol (Coreg), 25 mg twice daily; amlodipine (Norvasc), 10 mg daily; and lisinopril (Prinivil, Zestril), 40 mg daily. He has been intolerant to clonidine (Catapres) in the past.

Which one of the following medication changes would be most reasonable?

- A) Adding isosorbide mononitrate (Imdur)
- B) Adding spironolactone (Aldactone)
- C) Substituting furosemide (Lasix) for chlorthalidone
- D) Substituting losartan (Cozaar) for lisinopril

221.

ANSWER: B

Spirolactone is now recommended for treating resistant hypertension, even when hyperaldosteronism is not present. A longer-acting diuretic such as chlorthalidone is also recommended for treating hypertension, particularly in resistant cases with normal renal function. There is no benefit to switching from an ACE inhibitor to an ARB. Nitrates have some effect on blood pressure but are recommended only for patients with coronary artery disease.

References

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