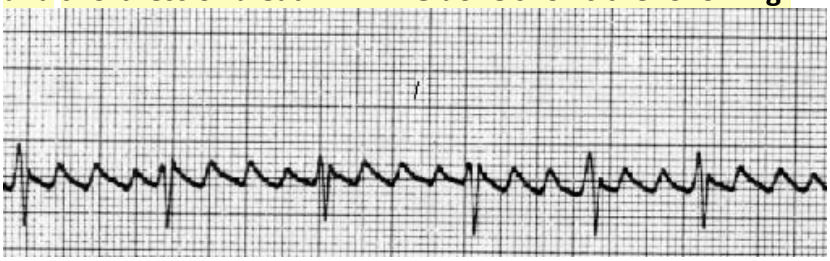
Chapter 1

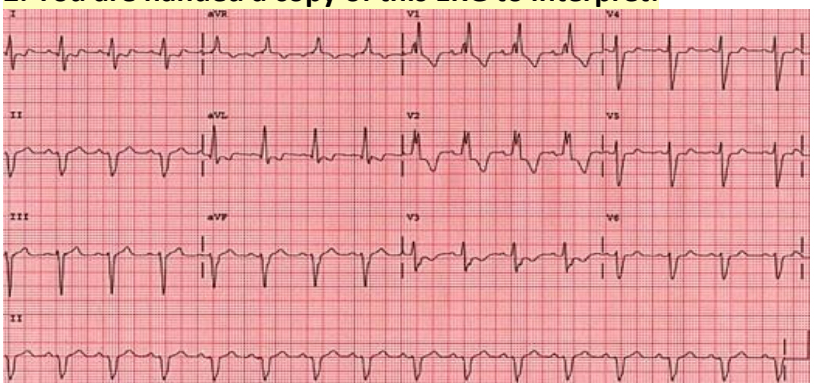
1. A 63-year-old woman presents to the ED with palpitations, with a pounding feeling in her chest and shortness of breath. An EKG done shows the following:



This patient has:
Atrial fibrillation
Atrial flutter
Ventricular fibrillation
Ventricular flutter

The correct answer is b)
Explanation: An EKG of Atrial flutter will show the following:
Atrial rate: Usually 300 beats/min, ranging between 220 and 350 beats/min
Rhythm: The atrial rhythm is regular
P waves: Flutter waves resemble a sawtooth or picket fence and are best seen in leads II, III oraVF
PR interval: Usually the PR interval is regular, but it may vary
QRS interval: This pattern is usually normal
Treatment involves rate control with calcium channel blockers or beta blockers. Conversion of ratewith a type I antiarrhythmic agent, such as quinidine or procainamide follows.

2. You are handed a copy of this EKG to interpret:



What is your answer?

Left Bundle branch block & Left axis deviation
Left Bundle branch block & Right axis deviation
Right Bundle branch block & Left axis deviation
Right Bundle branch block & Right axis deviation

The correct answer is c)

Explanation: This EKG clearly shows a right bundle branch block, look at lead V1. The axis is calculatedas follows:

Look at the net amplitude in leads I and aVF, then find which quadrant this falls in.
Both I and aVF positive = normal axis
Both I and aVF negative = axis in the Northwest TerritoryLead I
negative and aVF positive = right axis deviation

Lead I positive and aVF negative = left axis deviation
Causes of a Northwest axis (no man's land): emphysema, hyperkalemia, lead transposition, artificial cardiac pacing, ventricular tachycardia.
Causes of right axis deviation: normal finding in children and tall thin adults, right ventricular hypertrophy, COPD, anterolateral MI, left posterior hemiblock, pulmonary embolus, Wolff-Parkinson-White syndrome, ASD, VSD.
Causes of left axis deviation: left anterior hemiblock, Q waves of inferior myocardial infarction, artificial cardiac pacing, hyperkalemia and tricuspid atresia.

3. An 80-year-old male presents to your office for preoperative clearance. He denies any complaints other than some right knee pain resulting from a longstanding injury. His EKG reveals

Right bundle branch block
Left bundle branch block
Wolff-Parkinson-White syndrome type A
Right ventricular hypertrophy
Posterior myocardial infarction

The correct answer is a)

Explanation: This EKG shows the classic pattern of right bundle branch block (RBBB). There is a prolonged QRS, an rSR', downsloping ST- and T-wave inversions in V1 and V2, and a wide, slurred S wave in lead I. Left bundle branch block also causes a prolonged QRS, but very different additional findings. Wolff-Parkinson-White (WPW) syndrome type A causes a prolonged QRS but there is a characteristic initial slurring of the QRS (a Δ wave) not seen on this EKG. A shortened PR interval would also be likely. Right ventricular hypertrophy will produce an R wave in V1, but there will not beQRS widening. A true posterior myocardial infarction would also produce an R wave in V1, as well as the ST segment depression found in RBBB, but the T waves would be upright; in addition, the patientwould likely be quite ill.

4. A 68-year-old patient comes to ED complaining of dyspnea. On exam his vitals show HR 160 bpm, BP 110/60 mmHg. His EKG shows supraventricular tachycardia (SVT). What is the treatment of choice?

Digoxin PO
Digoxin IV
Digoxin and Furosemide
Digoxin and Warfarin
Adenosine

The correct answer is e)

Explanation: In the treatment of SVT, adenosine, a short-acting medication is used to decrease the heart rate. This medication is given by IV to act quickly. Adenosine has some temporary side effects,including facial flushing, chest pain, shortness of breath, nausea and dizziness. If a single dose does not stop supraventricular tachycardia, then you can give higher doses. Adenosine successfully stopsparoxysmal supraventricular tachycardia (PSVT) in more than 90% of cases.
If adenosine is unsuccessful, other medications can be used, such as calcium channel blockers, digoxin (Lanoxin), or beta-blockers.

5. A young female presents with supraventricular tachycardia. The patient does not experience symptomsof haemodynamic decompensation. The best initial management is:

IV Verapamil
Cardioversion
Increased vagal tone
Beta-blocker
IV Adenosine

The correct answer is c)
Explanation: Vagal maneuvers are the first-line treatment in hemodynamically stable patients. Vagal maneuvers, such as breath-holding and the Valsalva maneuver (ie, having the patient bear down as though having a bowel movement), all slow conduction in the AV node and can potentially interrupt the reentrant circuit
Carotid massage is another vagal maneuver that can slow AV nodal conduction. Massage the carotid sinus for several seconds on the nondominant cerebral hemisphere side. This maneuver is usually reserved for young patients. Due to the risk of stroke from emboli, auscultate for bruits before attempting this maneuver. Do not perform carotid massage on both sides. A Valsalva maneuver, if performed properly by the patient, can frequently avert an attack.
Synchronized cardioversion starting at 50 J can be used immediately in patients who are hypotensive, have pulmonary edema, have chest pain with ischemia, or are otherwise unstable.
When SVT is not terminated by vagal maneuvers, short-term management involves intravenous adenosine. Other alternatives for the acute treatment of SVT include calcium channel blockers like verapamil, diltiazem or beta-blockers like metoprolol or esmolol.

6. Which one of the following is true regarding supraventricular tachycardia (SVT)?
Verapamil is useful for decreasing recurrences of SVT
Hyperparathyroidism is a common cause of SVT
Hyponatremia is a common cause of SVT
Carotid sinus massage and adenosine are contraindicated in SVT
Excessive alcohol intake can suppress SVT

The correct answer is a)
Explanation: The use of verapamil, propranolol, or digoxin reduces SVT episodes by 30%-50%. There is no evidence that one is superior to the others.
Hypokalemia and hyperthyroidism can cause SVT, but there is no association with hyperparathyroid disease or hyponatremia.
Carotid sinus massage and adenosine have been used for diagnosing atrial tachycardia. (Adenosine is an ultra-short-acting drug that is useful in SVTs of unknown origin both in making the diagnosis and in terminating those that are dependent on the AV junction and some focal atrial tachycardia.)
Excessive alcohol use can precipitate SVT.

7. A 36-year-old white female presents to the emergency department with palpitations. Her pulse rate is 180 beats / min. An EKG reveals a regular tachycardia with a narrow complex QRS and no apparent P waves. The patient fails to respond to carotid massage or to two doses of intravenous adenosine (Adenocard), 6 mg and 12 mg. The most appropriate next step would be to administer intravenous:
amiodarone (Cordarone)
digoxin (Lanoxin)
flecainide (Tambocor)
propafenone (Rhythmol)
verapamil (Calan)

The correct answer is e)

Explanation: If supraventricular tachycardia is refractory to adenosine or rapidly recurs, the tachycardia can usually be terminated by the administration of intravenous verapamil or a beta-blocker. Verapamil has a longer half-life than adenosine and may help maintain sinus rhythm following the termination of SVT. It is also advantageous for controlling the ventricular rate in patientswith atrial tachyarrhythmia. If that fails, intravenous propafenone or flecainide may be necessary. It isalso important to look for and treat possible contributing causes such as hypovolemia, hypoxia, or electrolyte disturbances. Electrical cardioversion may be necessary if these measures fail to terminatethe tachyarrhythmia. Consider radiofrequency ablation for any patient with symptomatic paroxysmal supraventricular tachycardia in whom long-term medical treatment is not effectively tolerated or desired.

8. An elderly woman develops a stasis ulcer on her lower extremity that causes pigmentary changes. Seepicture, The most appropriate intervention in the prevention and treatment of this condition is:

Pneumatic stockings
Stripping saphenous vein
Topical antibiotics
Anticoagulants



The correct answer is a)

Explanation: Venous ulcers form when blood flow through the legs is reduced, causing blood to poolin the leg veins. Then, pressure increases in the veins and capillaries (tiny blood vessels that connect arteries and veins). The increased pressure causes fluid to leak from the blood vessels into surrounding tissue, and swelling develops.

If venous ulcers result from chronic venous insufficiency, the legs are swollen, and the skin is dark reddish brown and very firm (a condition called stasis dermatitis). The skin may itch, and the ulcersare usually very painful

The goals of prevention and treatment are to reduce leg swelling and reduce the pressure in veins. If swelling is reduced enough, a venous ulcer may never form or may heal on its own. Often, specially designed bandages and pneumatic (compression) stockings help reduce swelling.

If cellulitis or signs of an infection of deeper tissues (such as pus) are present, antibiotics are taken by mouth or given intravenously. Drugs, such as nonprescription antibiotics, should not be applied directly to the skin of the leg. These drugs can cause allergic reactions that worsen the problem, particularly when the skin is cracked or there is an open sore.

9. The appropriate initial management of deep venous thrombosis is to:

Give heparin
Give warfarin
IVC filter
Pneumatic/compression stockings

The correct answer is a)

Explanation: Deep venous thrombosis (DVT) is clotting of blood in a deep vein of an extremity (usuallycalf or thigh) or the pelvis. DVT is the primary cause of pulmonary embolism (PE). DVT results from conditions that impair venous return, lead to endothelial injury or dysfunction, or cause hypercoagulability.

DVT may be asymptomatic or cause pain and swelling in an extremity. Diagnosis is by history, physical examination, and duplex ultrasonography, with d-dimer or other testing as necessary.

All patients with DVT are given anticoagulants, initially an injectable heparin (unfractionated or low molecular weight), followed by warfarin.

An Inferior vena cava filter (IVCF) may help prevent PE in patients with lower extremity DVT and contraindications to anticoagulants or with recurrent DVT (or emboli) despite adequate anticoagulation. Patients at higher risk of DVT should have compression devices or stockings placedfor prevention.

10. Which one of the following should be considered in geriatric patients when a long airline flight is planned?

Hypoxia with desaturation
Temporal disorientation
Barotitis
Dehydration
Deep venous thrombosis

Explanation: "Coach Class thrombosis", deep venous thrombosis (choice E) or pulmonary embolism associated with cramped conditions on long airline flights, is in fact a real phenomenon. However, therisk is small and only those already at increased risk of venous thromboembolism need to be concerned about it. The known complications of venous stasis must be avoided by the prophylactic use of ambulation and exercises during long flights. Patients at increased risk or presently on antithrombotic medications must be carefully monitored prior to their trip.

11. A 35-year-old black female has just returned home from a vacation in Hawaii. She presents to your office with a swollen left lower extremity. She has no previous history of similar problems. Homan's sign is positive, and ultrasonography reveals a noncompressible vein in the left popliteal fossa extending distally. Which one of the following is true in this situation?

Monotherapy with an initial 10-mg loading dose of warfarin (Coumadin) would be appropriate
Enoxaparin (Lovenox) should be administered at a dosage of 1 mg/k subcutaneously twice a day
The incidence of thrombocytopenia is the same with low-molecular-weight heparin as with unfractioned heparin
The dosage of warfarin should be adjusted to maintain the INR at 2.5-3.5
Anticoagulant therapy should be started as soon as possible and maintained for 1 year to prevent deep vein thrombosis (DVT) recurrence

The correct answer is b)

Explanation: The use of low-molecular-weight heparin allows patients with acute deep vein thrombosis (DVT) to be managed as outpatients. The dosage is 1 mg/kg subcutaneously twice daily. Patient chosen for outpatient care should have good cardiopulmonary reserve, normal renal function,and no risk for excessive bleeding. Oral anticoagulation with warfarin can be initiated on the first day of treatment after heparin loading is completed.

Monotherapy with warfarin is inappropriate. The incidence of thrombocytopenia with low-molecular-weight heparin is lower than with conventional heparin. The INR should be maintained at 2.0-3.0 in this patient. The 2.5-3.5 range is used for patients with mechanical heart valves. The therapeutic INR should be maintained for 3-6 month in a patient with a first DVT related to travel.

12. An otherwise healthy 62-year-old male has been hospitalized with community-acquired pneumonia for 2 days. He has remained bedridden. When you see him while making rounds, he mentions that he has noticed increased swelling and pain in his left lower extremity. Lower extremity ultrasonography revealsa deep venous thrombosis (DVT) in his calf. He has no previous history of blood clots.

Which one of the following is the best management of this patient's DVT?

Compression stockings and repeat ultrasonography in 2 days
Heparin therapy followed by oral anticoagulation for 3 months
Indefinite oral anticoagulation
Intravenous thrombolytic therapy
Insertion of an inferior vena cava filter

The correct answer is b)
Explanation: Without anticoagulation, patients with an uncomplicated calf deep vein thrombosis (DVT) have a significant risk of further clot extension, acute pulmonary embolus, or recurrence of thethrombus. They are also at risk for late complications such as the post-thrombotic syndrome or chronic thromboembolic hypertension. For this reason, monitoring a DVT by repeat ultrasonography is not a good option unless there are contraindications to anticoagulation, such as recent surgery, hemorrhagic stroke, active bleeding, or heparin-induced thrombocytopenia.

The recommended treatment for DVT is heparin (intravenous unfractionated or subcutaneous low molecular weight) followed by oral anticoagulation with warfarin once adequate anticoagulation is achieved. For a first episode of DVT due to an idiopathic cause or transient risk factor, such as short-term immobilization, the recommended length of treatment is 3-6 months. The benefit-to-risk ratio declines after 6 months unless the patient has a recurrent DVT or a known chronic risk factor, such asa thrombophilic condition or cancer.
Thrombolytic therapy with intravenous tissue plasminogen activator (tPA), urokinase, or streptokinase typically is reserved for patients with life-threatening pulmonary embolism. Inferior vena cava filters are used in patients who have a contraindication to anticoagulant therapy, recurrent venous thromboembolism despite adequate anticoagulation, or such limited pulmonary vascular reserve that they may not survive additional thromboemboli.

13. A 55-year-old male needs treatment for venous thromboembolic disease. What is the loading dose of unfractionated heparin to be administered if his weight is 75kg?

4000 unit bolus given through IV
5000 unit bolus given through IV
3000 unit bolus given through IV
8000 unit bolus given through IV
6000 unit bolus given through IV

The correct answer is e)
Explanation: Initial DVT treatment with unfractionated heparin (UFH):
Requires bolus (80U/kg) followed by continuous IV infusion (18 U/kg/hr(APTT in 6 hrs.)
weight-based heparin nomograms help to achieve proper dosing
advantages: rapidly reversible by protamine in case of bleeding
Disadvantages: must monitor aPTT with adjustment of dose to reach therapeutic level (~2xcontrol value); monitor platelet counts for development of thrombocytopenia.

14. You are treating a 53-year-old female for a deep-vein thrombosis in her left leg. The use of compression stockings for this problem has been shown to:

Increase the risk of pulmonary embolism
Increase the level of pain
Increase complications if used prior to completion of a course of anticoagulation therapy
Decrease the risk of post-thrombotic syndrome

The correct answer is d)
Explanation: Post-thrombotic syndrome (PTS) is a complication of acute deep-vein thrombosis (DVT), and is characterized by chronic pain, swelling, and skin changes in the affected limb. Within 5 years of experiencing a DVT, one in three patients will develop PTS. A Cochrane review identified three randomized, controlled trials examining the use of compression therapy in patients diagnosed with a new DVT. The use of elastic compression stockings was associated with a highly statistically significant reduction in the incidence of PTS, with an odds ratio of 0.31 (confidence interval of 0.20-0.48). A separate trial cited in the Cochrane review documented no increased incidence of pulmonary embolism, and a reduction in pain and swelling in the treatment group. Compression stockings shouldbe applied when anticoagulation therapy is started, not when it has been completed. The studies did not examine the rates of recurrent DVT.

15. A 30-year-old female who had a deep venous thrombosis in her left leg during pregnancy has an uneventful delivery. During the pregnancy she was treated with low molecular weight heparin. Just after delivery her left leg is pain free and is not swollen. She plans to resume normal activities soon.

Which one of the following would be most appropriate with regard to anticoagulation?

Discontinuing treatment, with no further evaluation
Discontinuing treatment if venous Doppler ultrasonography is negative for thrombus
Continuing low molecular weight heparin for 6 more weeks
Switching to low-dose unfractionated heparin for 6 weeks
Switching to aspirin for 6 weeks

The correct answer is c)
Explanation: The risk of pulmonary embolism continues in the postpartum period, and may actually increase during that time. For patients who have had a deep-vein thrombosis during pregnancy, treatment should be continued for 6 weeks after delivery, with either warfarin or low molecular weight heparin.

16. A 69-year-old male has a 4-day history of swelling in his left leg. He has no history of trauma, recent surgery, prolonged immobilization, weight loss, or malaise. His examination is unremarkable except for a diffusely swollen left leg. A CBC, chemistry profile, prostate-specific antigen level, chest radiograph, and EKG are all normal; however, compression ultrasonography of the extremity reveals a clot in the proximal femoral vein. He recalls having a similar problem 3 years ago when he returned from Australia.

In addition to initiating therapy with low molecular weight heparin, the current guidelines recommend that warfarin (Coumadin) be instituted now and continued for at least:

1 month
3 months
6 months
12 months
Indefinite

The correct answer is e)
Explanation: Duration of anticoagulant treatment:
first episode DVT with transient risk factor: 3 months
first episode DVT with ongoing risk factor such as cancer, or antiphospholipid antibody ormore than one risk factor: consider indefinite therapy
first episode DVT with no identifiable risk factors (idiopathic) or single inherited risk factor (ie.Factor V Leiden etc): 6-12 months or indefinite therapy (controversial)
recurrent DVT (2 or more episodes): indefinite therapy

17. **Risk factors for venous thromboembolism include which one of the following?**

Anemia
The use of oral hypoglycemic agents
Being underweight
Young age
Spinal cord injury

The correct answer is e)
Explanation: There are many risk factors for thromboembolism, including polycythemia vera, oral contraceptive use, obesity, advanced age, and spinal cord injury. Spinal cord injury induces immobility, as do obesity and advanced age. Oral contraceptives make blood more coagulable, particularly in patients with clotting factor abnormalities such as factor V Leiden. Polycythemia vera increases sludging of blood cells and increases the risk of forming clots. Clot risk is not increased by oral hypoglycemic agents, low BMI, youth, or anemia.

18. A 45-year-old woman comes to you after an episode of calf pain that began after arriving from a 16 hour flight. She is a non-smoker with no relevant personal or family history, and takes no medications. Her vital signs are stable and you find an area of erythema and induration on the affected leg. After a Doppler venous study of the lower limb you confirm the diagnosis of Deep Venous Thrombosis. What would be the preferred management in this patient?

Inpatient management with compression stocking, Warfarin, and Unfractioned Heparin
Inpatient management with leg elevation, Unfractioned Heparin, and Warfarin
Inpatient management with compression stocking, Low Molecular Weight Heparin, and Warfarin
Outpatient management with compression stocking, Low Molecular weight Heparin, and Warfarin
Outpatient management with leg elevation, Low Molecular Weight Heparin, and Warfarin

The correct answer is d)
Explanation: When any of the following is present, a patient should be managed on inpatient basis:
Presence of massive DVT (eg, iliofemoral DVT)
Presence of symptomatic pulmonary embolism
High risk of bleeding with anticoagulant therapy
Presence of comorbid conditions or other factors that warrant in-hospital care
Patients who have none of the mentioned criteria (as in this patient) are safe to be managed in the outpatient setting.
Low Molecular Weight Heparin, rather than Warfarin alone or Unfractioned Heparin, is the preferred initial agent for the outpatient management of Deep Venous Thrombosis. Warfarin should be started at the same time with Low Molecular Weight Heparin when not contraindicated.Compression stockings are recommended for at least 1 year in symptomatic DVT for the prevention of post-thrombotic syndrome.
This patient has no indications for inpatient management (choices A, B, and C). Her managementshould include Low Molecular Weight Heparin, Warfarin and Compression Stocks. Compression stockings are recommended for at least 1 year in symptomatic DVT for the prevention of post-thrombotic syndrome.
Key point: It is important to know when a patient with DVT can be managed in the outpatientsetting. It is also important to consider the use of compression stockings (additional to the treatment with LMWH and warfarin) to prevent post-thrombotic syndrome.

19. Which of the following beta blockers used to treat hypertension is contraindicated in an asthma

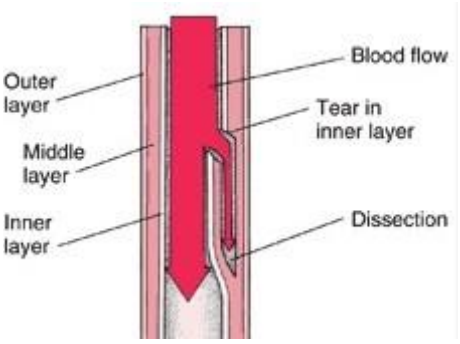
Acebutolol
Atenolol
Esmolol
Metoprolol
Labetalol

The correct answer is e)
Explanation: Beta blockers are either beta 1 selective where they only block the receptors on the heart. Or they can be non-selective and block both beta 1 and beta 2 receptors. Blockade of beta 1 receptors leads to a decrease in heart rate. Blockade of the beta 2 receptor leads to bronchoconstriction. This should be avoided in asthmatic patients.
Therefore it is best to only given beta 1 selective beta blockers to asthma patients when treatingtheir hypertension. This group includes the following four: acebutolol, atenolol, esmolol and metoprolol.

20. Which of the following is the most sensitive method for diagnosing aortic dissection?

MRI
CT scan
TEE
CXR
TTE

The correct answer is a)
Explanation:



Aortic dissection is the surging of blood through a tear in the aortic intima with separation of the intima and media and creation of a false lumen. The intimal tear may be a primary event or secondary to hemorrhage within the media. The dissection may occur anywhere along the aorta and extend proximally or distally into other arteries.
Diagnosis is by imaging tests (eg, transesophageal echocardiography, CT angiography, MRI, contrast aortography).
MRI is the gold standard test for the detection and assessment of aortic dissection, which has approximately 98% sensitivity and specificity. It is the most sensitive method for diagnosing aortic dissection and has similar specificity to CT scanning. It is a non-invasive test (does not require the use of iodinated contrast material) and can detect and quantitate the degree of aortic insufficiency.
Transesophageal echocardiography (TEE) has greater sensitivity (97% versus 80%) and specificity (97-100% versus 90%) than transthoracic echocardiography (TTE). TEE is as accurate as CT scanning in terms of sensitivity and specificity, and it can be used at the bedside, which makes it ideal for hemodynamically unstable patients.
→ Widening of the mediastinum on an x-ray of the chest has moderate sensitivity in the setting of an ascending aortic dissection. However, it has low specificity, as many other conditions can cause a widening of the mediastinum on chest x-ray

21. A 50 year old man arrives into your E.D. complaining of severe chest pain that radiates to his jaw and left arm. He rates his pain as 10/10 and says it began suddenly 1 hour ago and has been constant in intensity. He is sweating profusely and feels nauseous.
Vitals: HR 130, BP 150/90 (right arm) 120/85 (left arm), RR 19, T 37C
EKG: within normal limits (WNL)
Troponins: negative
CBC: WNL
Serum chemistries: WNL
BUN, Cr: WNL
Amylase: WNL
His chest x-ray is shown below:



The most likely diagnosis is:
Acute pancreatitis
Myocardial Infarction
Aortic Dissection
Pneumothorax
Tension pneumothoraxThe

correct answer is c)

Explanation:
Aortic Dissection
This patient's severe and unyielding chest pain with radiation is suggestive of myocardial infarction (MI), aortic dissection or acute pancreatitis from the available choices. The lack of dyspnea is less suggestive of pneumothorax. The normal CBC, serum chemistries, amylase, EKG and the negative cardiac enzymes do not necessarily rule out pancreatitis or MI; however, when you further consider the difference in blood pressures between arms (30 mmHg), and the widened mediastinum on x-ray, you should be leaning more towards aortic dissection in your differential.
A definitive diagnosis would be made via CT or MRI. Treatment includes the reduction of systolic blood pressure to 110 mmHg with B-blockade then maintenance with nitroprusside. Surgical options will depend on the type of dissection, Stanford type A or B (a topic that will not be covered here).

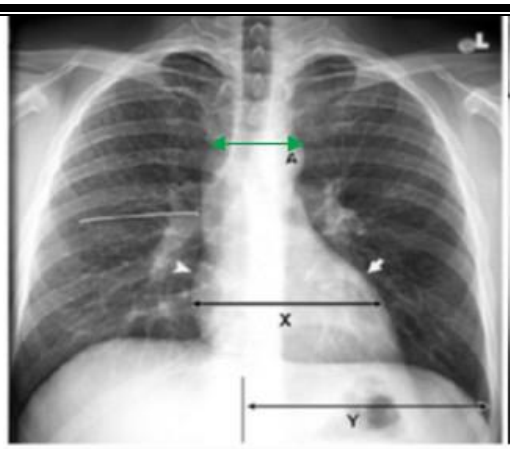


Fig 1. The aortic knob (A) is within normal limits. The green arrow indicates a normal mediastinum

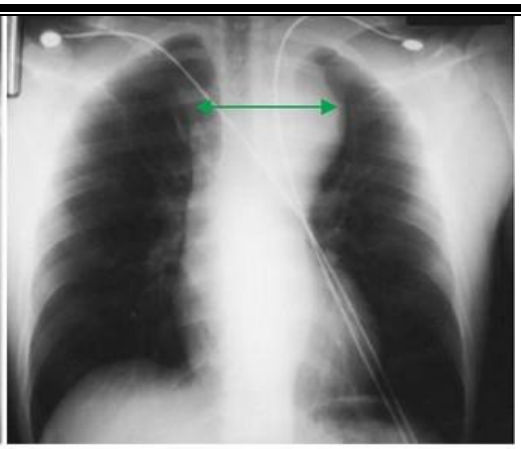


Fig 2. The aortic knob is markedly dilated causing a widened mediastinum. This abnormality suggests aortic pathology.

Acute pancreatitis (a) would typically produce elevated levels of amylase and lipase, leukocytosis, electrolyte imbalances, and an elevated CRP. It would not demonstrate a widened mediastinum on x-ray; rather, a sentinel loop (or an isolated distended loop of bowel seen near the site of the injured viscus—usually in left hypochondrium) would more likely be seen on abdominal x-ray.

Myocardial Infarction (b) would typically yield elevated cardiac enzymes and EKG changes (e.g. ST elevation). Further investigation would include echo or angiography. MI alone would not demonstrate a widened mediastinum on x-ray.

A patient with a pneumothorax (d) or tension pneumothorax (e) would present with dyspnea along with their chest pain (a history of trauma would also be likely for tension pneumothorax). Generally, on x-ray, one hemithorax may seem darker (more radiolucent) than the other as the area beyond the collapsed lung will have no pulmonary vessel markings. The pleural edge of the collapsed lung will be seen. Occasionally, there will be a shift in the mediastinal structures.

PEARL: Severe, sudden chest pain, blood pressure differences between arms and a widened mediastinum on x-ray should make you suspect aortic dissection.

22. Which of the following is contraindicated in an adult patient with Wolff-Parkinson-White Syndrome (WPW)?
Cardioversion
Procainamide
Amiodarone
Digoxin
Adenosine

The correct answer is d)

Explanation:
Wolff-Parkinson-White syndrome is a disorder in which an extra electrical connection between the atria and the ventricles is present at birth.
Digoxin is contraindicated in patients with WPW syndrome. It may shorten the refractory period and enhance conduction over the bypass tract, which may cause an even faster tachydysrhythmia or deterioration into ventricular fibrillation.

The treatment of choice is direct-current cardioversion.
If cardioversion is not possible, drugs that prolong the refractory period of the accessory connection should be used.
Examples are IV procainamide and amiodarone.
Adenosine is the first-line agent and is effective in approximately 90% of reentrant narrow-complex tachycardia

Question 24

Patients with Wolff-Parkinson-White syndrome who have episodic symptomatic supraventricular tachycardia or atrial fibrillation benefit most from:

Episodic intravenous digoxin
Long-term oral digitalis
Episodic beta-blockers
Radiofrequency catheter ablation of bypass tractsThe

correct answer is d)

Explanation:
Radiofrequency catheter ablation of bypass tracts is possible in over 90% of patients and is safer and more cost effective than surgery, with a similar success rate. Intravenous and oral digoxin can shortenthe refractory period of the accessory pathway, and increase the ventricular rate, causing ventricular fibrillation. Beta-blockers will not control the ventricular response during atrial fibrillation when conduction proceeds over the bypass tract.

Question 25

A 25-year-old male, diagnosed with WPW 2-years-ago, presents to the ED complaining of palpitations of 1 hour duration. He denies any major medical illness. He does not smoke but admits to drinking caffeine excessively.
His vitals are within normal limits except for a pulse rate of 160/min. The EKG showed a SVT (QRS duration, less than 120 ms) which failed to be controlled by carotid massage. Which of the following isthe most appropriate next step in management of this patient?
Adenosine
Digoxin
Diltiazem
Propranolol
Verapamil

The correct answer is a)

Explanation:
Never give a nodal blocking agent (beta blockers, digoxin and verapamil) to a WPW patient presenting with tachyarrhythmia! You may kill him! AV nodal blocking agents will block the AV node and allow the accessory pathway conduction to increase which may lead to a V tach or V fib and death.

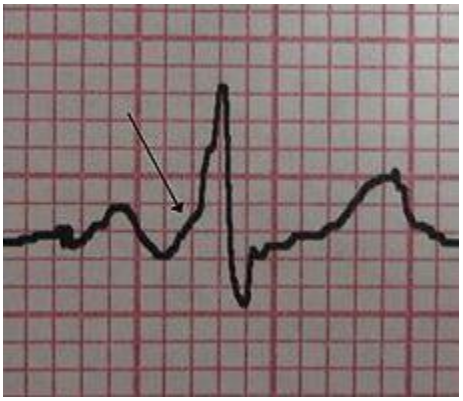
In a stable patient, when conservative measures fail, intravenous access is necessary. Short-term management includes adenosine as the first-line agent, which is effective in approximately 90% of reentrant narrow-complex tachycardias (QRS duration, less than 120ms). A defibrillator must be available in the event that new dysrhythmias emerge, particularly postadenosine AF. Procainamide is available for use in resistant cases.

Question 26

A 14-year-old male has been diagnosed with Wolff-Parkinson-White syndrome (WPW). He often complains of palpitations and dizziness. His condition has been managed with procainamide for the last few months but it has been difficult to control the arrhythmias effectively. Which of the followingwould be the definitive treatment of this patient's condition?
Verapamil
Amiodarone
Biphasic external waveform
Blowing with thumb in his mouth
Radiofrequency catheter ablationThe

correct answer is e)

Explanation:
Wolff-Parkinson-White (WPW) syndrome is currently defined as a congenital abnormality involving the presence of abnormal conductive tissue between the atria and the ventricles in association with supraventricular tachycardia. This syndrome is characterized by an accessory pathway called the bundle of Kent which is different from the normal conduction system in that atrial impulses reach the ventricle via an extra atrioventricular muscular connection and not through the atrioventricular node.



The ECG usually shows a PR interval < 120 ms and wide QRS complex >120 ms with a slurred upstroke, "the delta wave" preceding the QRS complex.

The delta wave is shown here , the PR interval is obiously shorter while the QRS is prolonged.

The initial management can be a bag of ice put on face in younger children and valsalva maneuver in older children. Procainamide is used for pharmacologic management of the arrhythmia. Patients who are hemodynamically unstable or have altered mental status can undergo cardioversion which could be accomplished with biphasic external waveform. The definitive treatment for Wolff-Parkinson-White syndrome is radiofrequency catheter ablation (choice E).

→ Verapamil and other AV node blockers should be used with caution, and if atrial fibrillation is also present they should be avoided as they block the heart's normal electrical pathway and exacerbate the syndrome by favoring transmission through the pre-excitation pathway.
→ Amiodarone is as useful as procainamide in the management of WPW; however, definitive treatment is accomplished by radiofrequency catheter ablation.
→ Blowing with thumb in his mouth is an alternative to valsalva maneuver, it may be used as an initial management of an episode but it is not the best definitive treatment.

Key point:
Radiofrequency catheter ablation is considered to be the definitive treatment of WPW syndrome.

Question 27

You suspect a secondary cause in one of your patients who has developed hypertension. Which of the following tests would not be part of your diagnostic work-up?

CT of abdomen
5-hydroxyindoleacetic acid
Urine catecholamines
Renal ultrasound
24 hour urinary free cortisol levelThe

correct answer is b)

Explanation:
Only 5% of causes of hypertension are from a secondary cause. Remember the mnemonic C.H.A.P.S.for the causes of secondary hypertension. Those are Cushing's, Hyperaldosteronism, Aortic coarctation, Pheochromocytoma, Stenosis of renal artery.

The diagnostic tests used to work up the above causes of secondary hypertension are 24 hour urinary cortisol level, basic metabolic panel, CT of abdomen, urinary catecholamines, renal ultrasound for Cushing's, Hyperaldosteronism, Aortic coarctation, Pheochromocytoma and Stenosis of renal artery, respectively.

5-hydroxyindoleacetic acid (5-HIAA) (choice B) is a break-down product of the chemical messenger serotonin in the urine. 5-HIAA levels to detect tumors in the digestive tract (carcinoid tumors).

Question 28

A 38-year-old nurse comes to the emergency department after leaving work early because of a "bad headache." She has had a "cold" with sinus congestion for the past week, and yesterday she began taking an over-the-counter combination of diphenhydramine and pseudoephedrine. She tells you she has a history of "migraines," multiple allergies, premenstrual syndrome and depression, for which she takes phenelzine (a monoamine oxidase inhibitor). Vital signs are: temperature 37.2°C (99.0°F), pulse90/min, respirations 16/min and blood pressure 210/118 mm Hg.

Which of the following is the most appropriate action?

Administer meperidine, intramuscularly
Administer phentolamine, intravenously
Order CT scan of the head
Order transillumination of the sinuses
Prescribe oral oxycodone and nasal corticosteroidsThe

correct answer is b)

Explanation:
This patient has hypertension secondary to the effects of the pseudoephedrine and her monoamine oxidase inhibitor. The inhibition of MAO-A causes the rise of norepinephrine, dopamine and serotonin in the synaptic cleft, of MAO-B only of dopamine. Pseudoephedrine displaces norepinephrine from synaptic terminals. For this reasons, nasal sprays such as the one this patient is taking are to be avoided when MAOIs are used. Phentolamine is a reversible alpha-adrenergic receptor blocker that will blunt the effects of the excess catecholamines on arteriolar vasoconstriction.

Question 29

For long-term therapy, the most effective control of heart rate in atrial fibrillation, both at rest and with exercise, occurs with which one of the following?

Digitalis
Beta-adrenergic blockers
Calcium channel blockers
Class 1A antiarrhythmicsThe

correct answer is b)

Explanation:
For long-term therapy, beta-adrenergic antagonist drugs provide the most effective control of heart rate in atrial fibrillation, both at rest and during exercise. Although calcium channel blockers also lowerheart rate both at rest and with exercise, they are not as effective as Beta-blockers. Digitalis is primarily effective in controlling the heart rate at rest, and often does not adequately control heart rate with exercise. The Class 1 antiarrhythmics are most useful in maintaining sinus rhythm and, in fact, may paradoxically increase heart rate.

Question 30

Which one of the following diseases is most commonly associated with atrial fibrillation?

Crohn's disease (regional enteritis)
Tuberculosis
Hypothyroidism
Systemic hypertension
Rheumatoid arthritisThe

correct answer is d)

Explanation:
Atrial fibrillation can be a cardiac sequela of primary noncardiac diseases. Systemic hypertension is present in 45% of patients with atrial fibrillation. Atrial fibrillation is also associated with diabetes mellitus, pulmonary diseases (specifically COPD, primary pulmonary hypertension, and acute pulmonary embolism), and acute ethanol ingestion. Atrial fibrillation is not commonly associated withCrohn's disease, tuberculosis, hypothyroidism (2% of patients), or rheumatoid arthritis.

Question 31

Compared to patients with permanent atrial fibrillation, patients with paroxysmal atrial fibrillation have a risk of stroke that is:
50% less
25% less
25% greater
50% greater
Similar

The correct answer is e)

Explanation:
Patients with paroxysmal atrial fibrillation (i.e., self-terminating) and persisting atrial fibrillation (i.e., that lasts more than 7 days or requires cardioversion) appear to have a risk of stroke that is similar tothat of patients with permanent atrial fibrillation.

Question 32

A 66-year-old female presents for a preoperative evaluation prior to elective podiatric surgery. She has no complaints other than her foot problem, and says she feels well. On examination she has an irregularly irregular heart rate with a 2/6 holosystolic murmur. An EKG reveals atrial fibrillation with a rate of 110 beats/min. Echocardiography shows mild to moderate mitral regurgitation and a dilated left atrium, but is otherwise normal. Which one of the following is the most appropriate initial treatment for this patient?

Digoxin, 0.125 mg/day
Quinidine gluconate, 324 mg 3 times daily
Atenolol (Tenormin), 25 mg/day
Sustained-release nifedipine (Adalat, Procardia), 180 mg/day
Unfractionated heparin sodium, 5000 units subcutaneously 3 times dailyThe

correct answer is c)

Explanation:
The primary goals of atrial fibrillation treatment are rate control and prevention of thromboembolism. Guidelines recommend rate control with atenolol, metoprolol, diltiazem, or verapamil (SOR A).

Digoxin does not control the heart rate with stress. Quinidine is proarrhythmic and does not controlthe heart rate. Nifedipine does not control the heart rate, and heparin does not provide adequate anticoagulation or control the heart rate.

Question 33

A 77-year-old male presents to your clinic in atrial fibrillation with a rate of 132 beats/min. He has hypertension, but no history of heart failure or structural heart disease. He is otherwise healthy and active.

The best initial approach to his atrial fibrillation would be:
Rhythm control with antiarrythmics and warfarin (Coumadin) only if he cannot be consistently maintained in sinus rhythm
Rhythm control with antiarrythmics and warfarin regardless of maintenance of sinus rhythm
Ventricular rate control with amiodarone, and warfarin for anticoagulation
Ventricular rate control with digoxin, and aspirin for anticoagulation
Ventricular rate control with a calcium channel blocker or beta-blocker, and warfarin for anticoagulation

The correct answer is e)

Explanation:
Regardless of the long-term management strategy chosen, control of ventricular rate is a critical component of management of new-onset atrial fibrillation (AF). Rate-controlling agents act primarily by increasing AV nodal refractoriness.
Beta-blockers and calcium channel blockers are first-line agents for rate control in AF. They are effective at rest and with exertion. Intravenous diltiazem or metoprolol are commonly used for AF witha rapid ventricular response. Caution should be exercised in patients with reactive airway disease who are given beta-blockers.

>Digoxin can be used in the acute setting but does little to control the ventricular rate in active patients. As such, it is rarely used as monotherapy. Digoxin is indicated in patients with heart failureand reduced LV function.
>Amiodarone is recommended for use as a rate-controlling agent for patients who are intolerant of or unresponsive to other agents, such as patients with CHF who may otherwise not tolerate diltiazem or metoprolol.

Several risk factor assessment algorithms have been developed to aid the clinician on decisions on anticoagulation for patients with AF. The CHADS2 index (Cardiac failure, Diabetes, Stroke [or S2 = transient ischemic attack]) is the most widely used of these algorithms. The CHADS2 index uses a pointsystem to determine yearly thromboembolic risk. Two points are assigned for a history of stroke or transient ischemic attack (TIA), and one point is given for age older than 75 years or a history of hypertension, diabetes, or heart failure.
This patient's CHADS2 score is 2 and therefore, anticoagulation therapy should be initiated.

Question 34

In a patient with atrial fibrillation, which one of the following confers the greatest risk for stroke?
Age over 75
Diabetes mellitus
Previous history of stroke
Congestive heart failure
Hypertension

The correct answer is c)

Explanation:
It is well established that atrial fibrillation is associated with a heightened risk of stroke. Anticoagulant therapy is not without risk, and for this reason a risk-scoring system has been developed to aid the clinician in deciding on therapy. Points are assigned using the acronym “CHADS2”. One point each is given for a history of Congestive heart failure, Hypertension (both treated and untreated), Age greaterthan 75, and Diabetes mellitus, and 2 points for a previous history of Stroke or TIA.

Question 35

A chronic smoker presents with cough, dyspnea and swelling in the face and neck. You suspect superior vena cava obstruction.

What is your next step?

Chest x-ray
Pulmonary function tests
V/Q Scan
Arteriogram

The correct answer is a)

Explanation:
Superior vena cava syndrome (SVCS) is a collection of symptoms caused by the partial blockage or compression of the superior vena cava, the major vein that carries blood from the head, neck, upper chest, and arms to the heart. Nearly 95% of SVCS cases are caused by cancer.

The most common symptoms are these: problems breathing, coughing and swelling in the face, neck, upper body, and arms.

Approximately 90% of cases are associated with a cancerous tumor that is compressing the superior vena cava. A chest x-ray usually shows a mediastinal mass (tumor) that is compressing the superior vena cava.

Question 36

A 55-year-old man who is a smoker, comes in with a complaint of pain in his right calf. He says that it comes and goes and happens when he walks up a flight of stairs.

What is the next step to diagnose your suspicion of intermittent claudication?

MRI of leg
V/Q Scan
CT of lumbar spine
Ankle Brachial index The

correct answer is d)

Explanation:
Intermittent claudication, the most common symptom of peripheral arterial disease, results from gradual narrowing of a leg artery. It is a painful, aching, cramping, or tired feeling in the muscles of theleg, not in the joints. Intermittent claudication occurs regularly and predictably during physical activitybut is always relieved promptly by rest. The muscles ache when a person walks, and the pain begins more quickly and is more severe when the person walks quickly or uphill.

Usually, after 1 to 5 minutes of rest (sitting is not necessary), the person can walk the same distance already covered, although continued walking will again provoke the pain at a comparable distance. Most commonly, the pain occurs in the calf, but it can also occur in the thigh, hip, or buttock, depending on the location of the blockage.

The ankle–brachial index is an effective screening tool. The ankle–brachial index is calculated by dividing the ankle pressure (the higher of the posterior tibial artery pressures) by the brachial systolicpressure (the higher of the two arm pressures).

An ankle–brachial index below 0.95 at rest or following exercise is considered abnormal. An ankle–brachial index between 0.8 and 0.5 is consistent with intermittent claudication, and an index of less than 0.5 indicates severe disease.

Question 37

Which of the following is the most important step in the management of peripheral arterial disease?

Diabetic control
Blood pressure control
Exercise
Smoking cessation
Correction of dyslipidemiaThe

correct answer is d)

Explanation:
Peripheral arterial disease (PAD) is a common circulatory problem in which narrowed arteries reducethe blood flow to the limbs.

Risk factors for PVD include smoking, hyperlipidemia, diabetes mellitus, and hyperviscosity. Other etiologies for developing PVD may include phlebitis, injury or surgery, and autoimmune disease, including vasculitides, arthritis, or coagulopathy.

Most people with PAD can be treated with lifestyle changes, medications or both. Lifestyle changes to lower the risk include: stop smoking (single most important modifiable cause of PAD; smokers have a particularly strong risk of PAD), control diabetes, control blood pressure, be physically active (includinga supervised exercise program), eat a low–saturated–fat, low–cholesterol diet.

Question 38

A 74-year-old white male complains of pain in the right calf that recurs on a regular basis. He smokes 1 pack of cigarettes per day and is hypertensive. He has a history of previous heart attack but is otherwise in fine health.

Which one of the following findings would support a diagnostic impression of peripheral vascular disease?

Pain during rest and exercise and the presence of swelling and soreness behind the knee and in the calf
Pain that begins immediately upon walking and is unrelieved by rest
Doppler waveform analysis showing accentuated waveforms at a point of decreased blood flow
Treadmill arterial flow studies showing a 20-mm Hg decrease in ankle systolic blood pressure immediately following exercise
An ankle-brachial index of 1.15 The

correct answer is d)

Explanation:
Peripheral vascular disease (PVD) is a clinical manifestation of artherosclerotic disease and is caused by occlusion of the arteries to the legs. Patients with significant arterial occlusive disease will have a prominent decrease in the ankle-brachial index from baseline following exercise, and usually a 20-mm Hg or greater decrease in systolic blood pressure. Typical symptoms of peripheral artery disease include pain in the legs with walking that goes away with rest. This is called intermittent claudication.

Pain during rest and exercise and the presence of swelling and soreness behind the knee and in the calf (choice A) is found in those with Baker's cysts.
Peripheral nerve pain commonly begins immediately upon walking and is unrelieved by rest (choice B).
Doppler waveform analysis is useful in the diagnosis of PVD and will reveal attenuated waveform at a point of decreased blood flow (choice C).
Employment of the ankle-brachial index (choice E) is encouraged in daily practice as a simple means to diagnose the presence of PVD. Generally, ankle-brachial indices in the range of 0.91-1.30 are thought to be normal.

Question 39

A 76-year-old white male with a history of type 2 diabetes mellitus presents with a well-demarcated ulcer on the lateral aspect of his right ankle. Because of associated edema, you are unable to palpate pulses in his feet.

The most appropriate next step in the care of this patient would be to:

Begin compression therapy with elastic bandages
Prescribe aspirin, 300 mg daily
Prescribe pentoxifylline (Trental), 800 mg daily
Perform venography
Perform a noninvasive arterial evaluationThe

correct answer is e)

Explanation:

Since palpation of the dorsalis pedis pulse on the affected limb is difficult in this patient due to edema, further diagnostic evaluation to rule out associated arterial insufficiency is warranted. Compression therapy in patients with underlying arterial disease may cause limb ischemia. Noninvasive diagnostic procedures, such as determining the ankle-brachial index or performing transcutaneous oxygen measurement, are simple methods for detecting arterial disease. Venography is usually reserved for investigation before surgery, if indicated. Aspirin and pentoxifylline may improve healing but would not be started until a diagnosis has been established.

Question 40

A 62-year-old white male presents with symptoms of intermittent claudication. The patient smokes 1 pack of cigarettes per day and says he has been told in the past that he has diabetes mellitus, high cholesterol, and high blood pressure. He has not followed up on these problems with a physician because he has been "too busy".

On examination his blood pressure is 140/105 mm Hg, and he has findings consistent with peripheral artery disease. A laboratory workup reveals moderate hyperglycemia and elevated total and LDL chol

Which one of the following would have the most significant effect on improving the outcome of inte

Control of his diabetes mellitus
Control of his hypertension
Treatment of his dyslipidemia
Smoking cessation The

correct answer is d)

Explanation:
Cigarette smoking is the most important risk factor for intermittent claudication, which is the most common symptom of peripheral vascular disease (PVD). Intermittent claudication is described as cramping pain in the muscles of the legs with exercise, and is experienced by 2% of adults over 65 years of age. In one multi-site study of nearly 7,000 adults over 50 years of age, 29% had PVD, defined by an ankle-brachial index (ABI) of ≤ 0.9. As many as 90% of those with PVD may be asymptomatic.

Cigarette smoking increases the odds for PVD by 1.4 for every 10 cigarettes smoked/day. In addition to smoking, risk factors include diabetes mellitus, hypertension, and hyperlipidemia. Lifestyle modification is important in the management of PVD, with smoking cessation as the single most important intervention. Exercise training can increase functional capacity by increasing walking time up to 150%. Medical management of comorbid conditions is necessary to optimize control and decrease morbidity and mortality from PVD and its complications, e.g., leg ulcers, osteomyelitis, acute limb ischemia, and amputation.

The Heart Outcome Prevention Evaluation (HOPE) trial demonstrated that use of ramipril reduced cardiovascular morbidity and mortality in PVD patients by 25%, regardless of the need for control of hypertension. However, data are insufficient to support the use of an ACE inhibitor in patients with PVD who are not hypertensive.

Question 41

A 58-year-old male complains of leg claudication. Subsequent tests reveal that he has significant bilateral peripheral arterial disease. His current medications include atenolol (Tenormin), 50 mg/day,and aspirin, 325 mg/day. His blood pressure is 128/68 mm Hg, and his pulse rate is 64 beats/min. HisLDL cholesterol level is 3.4mmol/L.

The addition of which one of the following could reduce this patient's symptoms?
Epoetin alfa (Epogen)
Nifedipine (Procardia)
Simvastatin (Zocor)
Testosterone supplementation
Warfarin (Coumadin) titrated to an INR of 2.0-3.0 The

correct answer is c)

Explanation:
Peripheral arterial disease (PAD) is a common malady that has several proven treatments. The outcomes of these treatments can be separated into two primary categories: reducing PAD symptomsand preventing death due to systemic cardiovascular events (CVEs), especially myocardial infarction. Routine exercise up to near-maximal pain on a regular basis has been shown to be one of the most effective treatments for symptoms of PAD. Smoking cessation and aspirin are also standard recommendations, and can both prevent CVEs and slow the rate of progression of PAD symptoms.
Statin drugs (specifically simvastatin and atorvastatin) have been shown to be beneficial for treatmentof PAD symptoms and prevention of CVEs through the reduction of cholesterol, but they also appear to have other properties that help reduce leg pain in patients with PAD.

Although lowering abnormally high blood pressure is recommended in PAD patients, only ACE inhibitors have been shown to reduce symptoms of PAD directly. Furthermore, the combination of atenolol and nifedipine has actually been shown to worsen symptoms of PAD.
The addition of warfarin to aspirin has no additional benefit in either reduction of PAD symptoms or prevention of CVEs, but it may have a role in preventing clots in patients who have undergone revascularization.

Question 42

A 60-year-old white female presents with pain in her left calf on walking. The pain does not go away with continued walking, and is relieved only by rest. She smokes a pack of cigarettes daily and has type2 diabetes mellitus which is only moderately controlled with oral agents. She has been fairly noncompliant with dietary measures, and has not been interested in following your recommendationsregarding medication for her hyperlipidemia. She is unable to do many of the things that she previously enjoyed doing, such as playing golf. Her ankle-brachial index at rest on the left is 0.60 and on the right is 1.10.

Which one of the following is shown to be most beneficial for this patient's peripheral vascular disease?

Strict exercise training program
LDL-cholesterol < 3.4 mmol/L (130 mg/dL)
Tight control of her diabetes
Reduction in walking distance, to decrease MI risksThe

correct answer is a)

Explanation:
Exercise therapy for peripheral vascular disease (PVD) improves maximal treadmill walking distance and functional capacity. A rigorous exercise-training program may be as beneficial as bypass surgery and more beneficial than angioplasty. The goal LDL-cholesterol level in patients with established atherosclerotic vascular disease, including those with PVD (and all patients with diabetes mellitus) should be < 2.6 mmol/L (100 mg/dL). Tight control of diabetes mellitus has not been shown to favorably affect PVD.

Question 43

When interpreting a diagnostic test, the term "gold standard" refers to a definitive diagnosis obtainedby some independent means. All of the following would be examples of gold standards useful in clinical practice, except:

Coronary angiography in evaluating a cardiac stress test
Bacteriologic culture in testing a rapid diagnostic kit for gonorrhea
Bronchoscopy with biopsy in evaluating sputum cytology
Autopsy results in evaluating electrocardiography
Antinuclear antibody (ANA) assay for rheumatoid arthritisThe

correct answer is e)

Explanation:
Coronary angiography (choice A) in evaluating a cardiac stress test, bacteriologic culture (choice B) in testing a rapid diagnostic kit for gonorrhea, bronchoscopy (choice C) with biopsy in evaluating sputum cytology, and autopsy results (choice D) in evaluating ECG are all gold standards in diagnosis.

Diagnostic studies for rheumatoid arthritis (RA) are hampered by the lack of an independent gold standard for RA. Since the most important clinical features of RA are the persistence of the arthritis and the development of erosions, arthritis outcome is a clinically relevant gold standard. Diagnosis is aphased, multivariable process in which the probability of the presence of disease is updated continuously when new diagnostic information is added to the patient profile. Although ANAs are present in approximately 40% of patients with RA, test results for antibodies to most nuclear antigen subsets are negative.

Question 44

A 56-year-old black male with long standing hypertension and a 30-pack-year smoking history has a 2-day history of dyspnea on exertion. Physical examination is unremarkable except for rare crackles at the bases.

Which one of the following serologic tests would be most helpful for detecting left ventricular

Brain Natriuretic peptide (BNP)
Troponin-T
C-reactive protein (CRP)
D-dimer
Cardiac interleukin-2 The

correct answer is a)

Explanation:
Brain Natriuretic peptide (BNP) is a 32-amino acid polypeptide secreted from the cardiac ventricles in response to ventricular volume expansion and pressure overload. The major source of BNP is the cardiac ventricles, and because of its minimal presence in storage granules, its release is directly proportional to ventricular dysfunction. It is a simple and rapid test that reliable predicts the presenceor absence of left ventricular dysfunction on an echocardiogram.

Question 45

Which one of the following ankle-brachial index (ABI) ranges is associated with the lowest rate of leg pain and claudication?
a) 1.00-1.39
b) 0.70-0.99
c) 0.40-0.69
d) < 0.40

The correct answer is a)

Explanation:
The average ankle-brachial index (ABI) in patients with nonperipheral arterial disease has been reported to be approximately 1.15. One study compared patients whose ABI was 1.10-1.19 with those whose ABI was 1.20-1.29. The percentage of patients who had no pain was similar for the two groups (85.3% and 87.4%), and the percentage of those with classic claudication was identical (0.8%).

Question 46

A 44-year-old female comes to your office with non-radiating chest pain of several days' duration. She describes the pain as sharp and stabbing, and indicates that it is located at the left sternal border; it is increased by coughing and palpation. There is no family history of heart disease, nor is there a personal history of diabetes, hypertension, smoking, or hyperlipidemia. A physical examination, an EKG, and chest radiographs are all normal.

Further diagnostic studies should include:
a treadmill exercise test with EKG and blood pressure monitoring
a stress echocardiogram
stress myocardial perfusion imaging
referral for cardiac catheterization
no additional tests The

correct answer is e)

Explanation:
This patient exhibits atypical (noncardiac) chest pain (most likely musculosceletal) and has no risk factors for coronary artery disease (CAD). Since the likelihood of coronary disease is very low, stress testing is not indicated.
For patients with typical chest pain and risk factors, the probability of CAD is high and it is usually bestto proceed directly to cardiac catheterization. In individuals with an intermediate probability of CAD who are able to exercise, the choice is treadmill testing if they have an interpretable EKG, no evidenceof left ventricular dysfunction, and no history of previous coronary artery bypass surgery. If the baseline EKG is not interpretable (due to left bundle branch block, early repolarization, left ventricularhypertrophy, or digoxin use) then an exercise test with imaging (nuclear or echocardiographic) is indicated. Those unable to exercise can have pharmacologic stress testing with imaging.

Question 47

A 69-year-old male who has a history of hypertension and ischemic heart disease presents with fatigue, dyspnea on exertion, and orthopnea. A clinical examination demonstrates pulmonary rales, tachycardia, a third heart sound, and mild pedal edema. A chest radiograph reveals cardiomegaly andpulmonary venous congestion, and a two-dimensional echocardiogram confirms heart failure.
Which one of the following is true regarding the management of this patient?
The serum brain natriuretic peptide (BNP) test can accurately differentiate diastolicfrom systolic heart failure
Optimal treatment for systolic heart failure is necessary to treat diastolic heart failure
Drugs that inhibit the production of angiotensin or block angiotensin II receptors are contraindicated
Calcium channel blockers reduce mortality in patients with isolated diastolic dysfunction
Beta-blockers are indicated for treating diastolic dysfunction

The correct answer is e)

Explanation:
The serum brain natriuretic peptide (BNP) test can accurately differentiate heart failure from noncardiac conditions in a patient with dyspnea, but it cannot distinguish diastolic from systolic heart failure. Optimal treatment for systolic heart failure may exacerbate diastolic heart failure. ACE inhibitors and angiotensin receptor blockers (ARBs) directly affect myocardial relaxation and compliance by inhibiting production of angiotensin or by blocking angiotensin II receptors, thereby reducing interstitial collagen deposition and fibrosis. The indirect benefits of optimizing hemodynamicsinclude improved left ventricular filling, reduced blood pressure, and improved exercise capacity and quality of life.

Large randomized, controlled trials have not proved that calcium channel blockers reduce mortality in patients with isolated diastolic function. ß-Blockers control heart rate and prevent tachycardia, thereby maximizing diastolic filling in patients with diastolic dysfunction. They also reduce blood pressure and myocardial ischemia, promote regression of left ventricular hypertrophy, and antagonizethe excessive adrenergic stimulation that occurs with heart failure. ß-Blockers also have been independently associated with improved survival in patients with diastolic heart failure.

Question 48

Coronary arteriography would be indicated for which one of the following?
A 45-year-old policeman with intermittent chest discomfort suggestive of angina pectoris who has a negative exercise stress test
A 38-year-old asymptomatic bank officer with a family history of “heart disease” who is to undergo hernia repair
A 72-year-old female with hypertension, asymptomatic PVCs on EKG, hyperlipidemia for which she refuses treatment, and worsening of her longstanding esophageal reflux pain
A 57-year-old anxious female with sharp anterior chest pain and a mid-systolic click and murmur The

correct answer is a)

Explanation:
Patients with careers that involve the safety of others (e.g., police officers and pilots) who have questionable symptoms and nondiagnostic stress testing, with reasonable doubt about significant coronary artery disease, are candidates for arteriography. A young male in otherwise good health doesnot need additional cardiac evaluation. Exercise stress testing might be indicated for the patient with worsening of her typical pain if her symptoms are unexplained by evaluation of the gastrointestinal tract. Patients with mitral valve prolapse do not usually require catheterization for diagnosis of chest pain.

Question #52

Question 49

A 67-year-old smoker, with a 40 pack year history of smoking cigarettes, comes to your office for an annual check up. He is known to have uncontrolled hypertension, with a BP today of 159/89 mmHg. Today he tells you that he is becoming short of breath, more so than usual. He also can manage about2 blocks before he needs to sit at a bench, before he can resume. He tells you that his calf muscles begin to ache at the end of the two blocks and the pain is relieved after resting. You take an ankle-brachial pressure index (ABPI) measurement.

What do you expect his ABPI value to be between?a) >

1.5
b) 1
c) 1.0-0.7
d) 0.7-0.4
e) < 0.35

The correct answer is d)

Explanation:
This individual is experiencing claudicating pain, which is pain that begins upon exertion and ends with rest. Claudication is defined as reproducible ischemic muscle pain, which occurs during physical activityand is relieved after a short rest. Pain develops because of inadequate blood flow. A normal ABPI is between 0.9 and 1.2. You should expect the ABPI in someone with claudicating pain to lie between 0.7-0.4. When the ABPI is below 0.4, rest pain is a key sign to be aware of, and would indicate urgent vascular surgery to alleviate the ischemia.

Question 50

In a 70 year old female with a history on angina tells you about yesterday's “gripping” and “pressure like” chest pain that went away on its own after 15mins. Her past medical history includes osteoporosis of the hip and osteoartritis of the kneee.Her resting ECG is normal.

What is the most appropriate initial step in the management of this patient?

Enhanced external counterpulsation
Angiography
Exercise stress testing
MIBI scan
Chest X-ray

The correct answer is d)

Question #52

Explanation:
Thallium Tl 201 and technetium Tc 99m sestamibi also simply known as MIBI scan (choice D) are the most frequently used myocardial perfusion scintigraphy tests. These tests are especially useful in patients with baseline ECG abnormalities, to localize the region of ischemia, and as prognostic indicators. They are also useful in patients with limitations of exerecise such as osteoarthritis this patient has. Myocardial perfusion scintigraphy has an overall sensitivity of 83% and specificity of 77%.

>Enhanced external counterpulsation (EECP)-choice A is for therapeutic use. In patients whose angina is refractory to medical therapy who are not suitable candidates for either percutaneous or surgical revascularization, EECP is a safe and noninvasive alternative therapy.

>Consider coronary angiography (choice B) in symptomatic patients with inconclusive noninvasive study results, in survivors of sudden cardiac death, in those who are considered to have a poor prognosis based on the results of noninvasive studies, in those with occupational requirements for adefinite diagnosis (eg, pilots), or in patients with coronary artery disease who are severely symptomatic despite maximal medical therapy. This patient currently has no symptoms and the bestinitial study would be stress test.

>Graded exercise stress testing (choice C) is the most widely used test for the evaluation of patients presenting with chest pain without contraindications. In patients with established stable angina pectoris, it also can provide prognostic information about the extent of disease.

>Chest radiograph (choice E) findings are usually normal in patients with angina pectoris

Question 51

A 55-year-old male who has a long history of marginally-controlled hypertension presents with gradually increasing shortness of breath and reduced exercise tolerance. His physical examination is normal except for a blood pressure of 140/90 mm Hg, bilateral basilar rales, and trace pitting edema. Which one of the following ancillary studies would be the preferred diagnostic tool for evaluating thispatient?
12-lead electrocardiography
Posteroanterior and lateral chest radiographs
2-dimensional echocardiography with Doppler
Radionuclide ventriculography
Cardiac MRI

The correct answer is c)

Question #52

Explanation:
The most useful diagnostic tool for evaluating patients with heart failure is two-dimensional echocardiography with Doppler to assess left ventricular ejection fraction (LVEF), left ventricular size, ventricular compliance, wall thickness, and valve function. The test should be performed during the initial evaluation. Radionuclide ventriculography can be used to assess LVEF and volumes, and MRI or CT also may provide information in selected patients. Chest radiography (posteroanterior and lateral) and 12-lead electrocardiography should be performed in all patients presenting with heart failure, but should not be used as the primary basis for determining which abnormalities are responsible for the heart failure.

Question #52

Question 52

A 23-year-old female sees you with a complaint of intermittent “irregular” heartbeats that occur once every week or two, but do not cause her to feel lightheaded or fatigued. They last only a few seconds and resolve spontaneously. She has never passed out, had chest pain, or had difficulty with exertion. She is otherwise healthy, and a physical examination is normal. Which one of the following cardiac studies should be ordered initially?
24-hour ambulatory EKG monitoring (Holter monitor)
30-day continuous closed-loop event recording
Echocardiography
An EKG
Electrophysiologic studiesThe

correct answer is d)

Explanation:
The symptom of an increased or abnormal sensation of one’s heartbeat is referred to as “palpitations.”This condition is common to primary care, but is often benign. Commonly, these sensations have their basis in anxiety or panic. However, about 50% of those who complain of palpitations will be found to have a diagnosable cardiac condition. It is recommended to start the evaluation for cardiac causes withan EKG, which will assess the baseline rhythm and screen for signs of chamber enlargement, previous myocardial infarction, conduction disturbances, and a prolonged QT interval.

Question 53

A 56-year-old white male presents with a 2-week history of intermittent pain in his left leg. The pain usually occurs while he is walking and is primarily in the calf muscle or Achilles region. Sometimes hewill awaken at night with “cramps” in the affected leg. He has no known risk factors for atherosclerosis. Which one of the following would be the best initial test for peripheral vascular occlusive disease?
Ankle-brachial index
Arterial Doppler ultrasonography
Arteriography
Magnetic resonance angiography (MRA)
Venous ultrasonographyThe

correct answer is a)

More invasive and expensive testing using Doppler ultrasonography, arteriography, or magnetic

Explanation:
The ankle-brachial index (ABI) is an inexpensive, sensitive screening tool and is the most appropriate first test for peripheral vascular occlusive disease (PVOD) in this patient. The ABI is the ratio of systolic blood pressure measured in the ankle to systolic pressure using the standard brachial measurement. Aratio of 0.9-1.2 is considered normal. Severe disease is defined as a ratio <0.50.

More invasive and expensive testing using Doppler ultrasonography, arteriography, or magnetic

resonance angiography may be useful if the ABI suggests an abnormality. Venous ultrasonography would not detect PVOD, but it could rule out deep venous thrombosis, which is another common etiology for calf pain.

Question 54

A 40-year-old white female presents with pain on inspiration and dyspnea since this morning. She has no chronic medical problems, takes no medications, has not traveled, and has no history of trauma. On examination the patient is afebrile, has a heart rate of 90 beats/min and a respiratory rate of 20/min, and her lungs are clear to auscultation. The pain is worse in the supine position.

Which one of the following would you do initially?
Order a CBC with differential
Order a chest film and EKG
Prescribe ibuprofen
Prescribe omeprazole (Prilosec)
Prescribe a bronchodilatorThe

correct answer is b)

Explanation:
This patient has pleuritic chest pain, and the fact that it is worse when supine and is accompanied by dyspnea creates additional concern. Supine pain could be due to pericarditis, which may be evident onan EKG. Dyspnea increases suspicion for pneumonia, pulmonary embolism, pneumothorax, and myocardial infarction, and a chest film and EKG are recommended to evaluate these possibilities. The lack of any significant medical history does not rule out any of these problems. Once these problems have been ruled out, a diagnosis of pleurisy would be reasonable and can be treated with an NSAID. A CBC would only indicate the possibility that infection or anemia is the cause of the problem.
Omeprazole or a bronchodilator would be inappropriate treatment, as asthma and reflux are not likelyin this patient.

Question 55

An anxious 62-year-old white male comes to the emergency department complaining of extreme shortness of breath and a cough producing blood-tinged sputum. The patient denies chest pain and fever. On examination he is afebrile and has expiratory wheezes and a few rales throughout the chest.The heart is normal except for a rapid rate and an S3 gallop. A chest radiograph reveals a right pleural effusion with enlargement of the cardiac silhouette and redistribution of blood flow to the upper lobes.

Which one of the following tests would be best for confirming the diagnosis?
Troponin I
BNP
D-dimer
CT angiography of the chest
Arterial blood gases The

correct answer is b)

Explanation:
This patient has heart failure with a bronchospastic component. The S3 gallop occurs with a dilated left ventricle and a right-sided pleural effusion, which are common in heart failure. A BNP level is useful in differentiating cardiac and pulmonary diseases, while a troponin I level is helpful in assessing for cardiac ischemia. Arterial blood gasses are not useful in confirming the diagnosis. A CT angiogram of the chest would be useful for diagnosing pulmonary embolism. A d-dimer test is helpful to rule out venous thromboembolic disease.

Question 56

A 60-year-old male complains of multiple episodes of lightheadedness over the past 3 months, saying he felt as if he might "pass out" while sitting at his desk. His past medical history and a physical examination are unremarkable. An EKG shows right bundle branch block, left anterior hemiblock, and PR interval prolongation.

Which one of the following would be the most appropriate next step?
Echocardiography
Cardiac event monitoring
Hospital admission for pacemaker insertion
Immediate initiation of aspirin and metoprolol (Lopressor)The

correct answer is b)

Explanation:
This patient's EKG demonstrates a right bundle branch block, PR interval prolongation as well as a left anterior hemiblock. This "trifascicular block" puts the patient at risk for tachyarrhythmias and bradyarrhythmias. Given the patient's complaint of near-syncope, a heart monitoring study would be most appropriate. An echocardiogram may be helpful eventually to assess cardiac function. Althoughthe patient is at risk for heart block, immediate hospitalization is not indicated.

Question 57

A 55-year-old male consults you because he wants to begin an exercise program. He is asymptomatic, but because of his family history you determine that he should undergo a stress test with echocardiography.

Which one of the following would be considered a normal ejection fraction in this patient?a) 48%
b) 65%
c) 76%
d) 84%
e) 92%

The correct answer is b)

Explanation:
The ejection fraction value is an important measure of left ventricular function, especially with regardto previous cardiac events, medications, exercise tolerance, and preoperative risk. The normal predicted value is 55%-75% when measured by echocardiography in a healthy asymptomatic patient. There is no gender difference, but there is a decline with age. It may be as low as 15% in patients withleft ventricular dysfunction. Ischemic and valvular heart disease may significantly reduce the ejection fraction.

Question 58

A 54-year-old male presents to the emergency department with an acute onset of chest pain. His cardiac risk factors include hypertension, hyperlipidemia, and a positive family history. His temperature is 37.0°C (98.6°F), pulse rate 80 beats/min, blood pressure 155/86 mm Hg, and respiratory rate 22/min. His oxygen saturation is 95% on room air. An EKG shows rare unifocal PVCsand nonspecific ST-T-wave changes. Initial cardiac markers are negative.
Which one of the following would be most appropriate at this point?

Helical (spiral) CT of the chest
Echocardiography
PA and lateral chest films
A ventilation-perfusion scan
Magnetic resonance angiographyThe

correct answer is c)

Explanation:
PA and lateral chest radiographs are still valuable in the early evaluation of patients with chest pain. While they do not confirm or rule out the presence of myocardial ischemia, other causes of chest pain may be evident, such as pneumothorax, pneumonia, or heart failure. The chest film may also provide clues about other possible diagnoses, such as pulmonary embolism, aortic disease, or neoplasia. The other tests listed often have a role in the evaluation of chest pain, but none has supplanted the plain chest film as the best initial imaging study.

Question 59

A 68-year-old man presents with cardiac arrest due to ventricular rupture. Which one of the following myocardial changes is the most frequent cause?

Abscess formation and tissue destruction due to infective endocarditis
Fatty change due to interaction of diphtheria exotoxin and carnitine
Aschoff bodies associated with rheumatic fever
Inflammation due to coxsackie B infection
Necrosis due to coronary artery obstructionThe

correct answer is e)

Explanation:
The most common cause of myocardial infarction is narrowing of the coronary blood vessels due to atheromatous plaques. Plaque rupture with subsequent exposure of the basement membrane resultsin platelet aggregation, thrombus formation, fibrin accumulation, hemorrhage into the plaque, and varying degrees of vasospasm.

This can result in partial or complete occlusion of the vessel and subsequent myocardial ischemia. Total occlusion of the vessel for more than 4-6 hours results in irreversible myocardial necrosis, but reperfusion within this period can salvage the myocardium and reduce morbidity and mortality.

Question 60

Which of the following findings is inconsistent with cardiac tamponade?

Hypotension
Pulsus paradoxus
Jugular venous distension (JVD)
Muffled heart sounds
Pericardial friction rubThe

correct answer is e)

Explanation:
Cardiac tamponade is the compression of the heart caused by blood or fluid accumulation in the space between the myocardium (the muscle of the heart) and the pericardium (the outer covering sac of the heart).

Beck's triad is a collection of three medical signs associated with acute cardiac tamponade, an emergency condition wherein fluid accumulates around the heart and impairs its ability to pump blood. The result is the triad of low arterial blood pressure, increased central venous pressure (leadingto JVD), and distant heart sounds.

A pericardial friction rub is used in the diagnosis of pericarditis.

Question 61

Which one of the following most favors a diagnosis of cardiogenic shock in a patient with acute myocardial infarction?

Acute pulmonary edema refractory to standard treatment
Ventricular arrhythmia and hypotension
Hypotension and low central venous pressure
Hypotension and high central venous pressure
Hypotension and sinus bradycardiaThe

correct answer is d)

Explanation:
Cardiogenic shock is based upon an inadequate circulation of blood due to primary failure of the ventricles of the heart to function effectively.

Since this is a category of shock there is insufficient perfusion of tissue (i.e. the heart) to meet the required demand for oxygen and nutrients. This leads to cell death from oxygen starvation, hypoxia. Because of this it may lead to cardiac arrest (or circulatory arrest) which is an acute cessation of cardiac pump function.

Cardiogenic shock is defined by sustained hypotension with tissue hypoperfusion despite adequate left ventricular filling pressure. Signs of tissue hypoperfusion include oliguria (<30 mL/h), cool extremities, and altered mentation. Hypotension due to decrease in cardiac output. A rapid, weak, thready pulse due to decreased circulation combined with tachycardia. Distended jugular veins due to increased jugular venous pressure.

Question 62

Cardiogenic shock is a major, and frequently fatal, complication of a variety of acute and chronic disorders that impair the ability of the heart to maintain adequate tissue perfusion. These patients demonstrate clinical signs of low cardiac output, with adequate intravascular volume.

Which of the following is usually found on physical examination?

Normal capillary refill.
Normal peripheral pulses
Bradycardia
Narrow pulse pressure
High urine output

The correct answer is d)

Explanation:
Cardiogenic shock characterized by primary myocardial dysfunction causes the heart to be unable to maintain adequate cardiac output. It is a medical emergency. These patients demonstrate clinical signsof low cardiac output, with adequate intravascular volume. The patients have cool and clammy extremities, poor capillary refill, tachycardia, narrow pulse pressure (choice D), and low urine output. Peripheral pulses are rapid and faint and may be irregular if arrhythmias are present.

Normal capillary refill (choice A) is incorrect. Patients in shock usually appear ashen or cyanotic andhave cool skin and mottled extremities.
Normal peripheral pulses (choice B) is incorrect. Peripheral pulses are rapid and faint and may be irregular if arrhythmias are present.
Bradycardia (choice C) is incorrect. The pulse pressure may be low, and patients are usually tachycardic.
High urine output (choice E) is incorrect. These patients show signs of hypoperfusion, such as altered mental status and decreased urine output.

Question 63

Which one of the following is least associated with Behcet's syndrome?

Mouth ulcers
Genital ulcers
Conjunctivitis
Deep vein thrombosis
Viral meningitis

The correct answer is e)

Explanation:
Behçet's syndrome is a multisystem, inflammatory, relapsing, chronic vasculitic disorder. Common manifestations include recurrent oral ulcers, ocular inflammation, genital ulcers, and skin lesions. Blindness, neurologic or GI involvement, venous thromboses, and arterial aneurysms are the most serious manifestations. Neurologic involvement is one of the most serious manifestations of Behçet syndrome, occurring in 10-30% of patients and carrying a poor prognosis. Manifestations include meningitis (aseptic) or meningoencephalitis; psychiatric symptoms, including personality changes; neurological deficits, including hemiparesis; and brainstem symptoms.

Diagnosis is clinical using international criteria. Treatment is mainly symptomatic but may involve corticosteroids for acute severe ocular or neurologic involvement or immunosuppressants for severe chronic features.

Almost all patients have recurrent painful oral ulcers resembling those of aphthous stomatitis; in most, these ulcers are the first manifestations. Similar ulcers occur on the penis and scrotum, on the vulva where they are painful, or in the vagina where they may cause little or no pain.

Question #64

A 27-year-old Korean female consults you regarding several painful ulcers she has developed in the vaginal area. Your examination reveals multiple 0.5-cm to 1.5-cm oval ulcers with sharply defined borders and a yellowish-white membrane. She denies recent sexual activity. Except for recurring aphthous ulcers of her mouth, her past history is unremarkable.

You obtain blood for a CBC and serology. A Tzanck smear and culture of her ulcer is negative for herpes simplex virus. Two days later she returns to discuss her laboratory findings. She draws your attention to a pustule with an erythematous margin at the site where the venipuncture was done.

At this time the most likely diagnosis is:
Reiter's syndrome
Behçet's syndrome
Syphilis
Mucocutaneous lymph node syndrome (Kawasaki disease)
AIDS

The correct answer is b)

Explanation:
The original description of Behçet's syndrome included recurring genital and oral ulcerations and relapsing uveitis. It is more common in Japan, Korea, and the Eastern Mediterranean area, and affects primarily young adults. It is a disease that involves inflammation of the blood vessels. The cause is unknown. Two-thirds of patients will develop ocular involvement that may progress to blindness. Patients may develop arthritis, vasculitis, intestinal manifestations, or neurologic manifestations. This disease is also associated with cutaneous hypersensitivity; 60%-70% of patients will develop a sterile pustule with an erythematous margin within 48 hours of an aseptic needle prick.

>Reiter's syndrome is not associated with genital ulcers.
>The ulcers of syphilis are characteristically painless.
>Mucocutaneous lymph node syndrome (Kawasaki disease) primarily affects children under 6 years ofage.
>While AIDS causes distinctive skin lesions, genital ulcers are not a common manifestation of this disease.

Question 65

A 46-year-old homosexual man comes to your practice complaining of eye pain and red eye. This pain has been there for a few weeks and the patient could not relate it to any particular event. He has no comorbidities and is not taking any medications. He has several sexual partners and often does not usea condom during intercourse. He asked for an HIV test 2 months ago, which reported a negative result. On examination, you find redness that is primarily noted at the junction between the cornea and the sclera, a constricted pupil, and the patient mentions that his eye is in a lot of pain. Further questioning reveals that during the past year, he has been getting painful, extensive mouth ulcers, and he can remember having at least 3 episodes during the year. You also find 2 small scars on his penis, as well asviolet subcutaneous nodules in the pretibial area. You decide to perform a biopsy of the skin lesions, which leads to a diagnosis of septal panniculitis. The treatment of his eye condition requires:

Topical steroids
IM Ceftriaxone
Oral Azithromycin
Acetazolamide drops
Workup for HIV

The correct answer is a)

Explanation:
The differential diagnosis of this presentation includes Behcet's disease, Reactive Arthritis, AIDS among others.
This patient fulfills diagnostic criteria for Behcet's disease:
--- recurrent oral aphthae (three times in one year)
--- plus two of the following:
--- Recurrent genital aphthae,
--- eye lesions (including anterior or posterior uveitis, cells in vitreous on slit lamp examination, or retinal vasculitis, observed by an ophthalmologist),
--- skin lesions (including erythema nodosum, pseudo vasculitis, papulopustular lesions, or acneiform nodules consistent with Behçet's),
--- a positive pathergy test (a papule 2 mm or more in size developing 24 to 48 hours after oblique insertion of a 20 to 25 gauge needle 5mm into the skin, generally performed on the forearm).
Considering this diagnosis, the patient's eye condition (iritis) should be managed with topical steroids accompanied with a midriatic agent (scopolamine, for example).

→ Neither diuretics (choice D) nor antibiotics (choice B and C) play a role in the treatment of a patient with Behcet's disease.
→ Even though it is appropriate to counsel the patient to obtain a full Sexually Transmitted Diseases screening (choice E) check up, that would not be the approach to treat his eye condition.

It is important to consider Behcet's Disease as part of the differential diagnosis in a patient with red eye and eye pain as the treatment of iritis differs a lot from the treatment of other conditions with redeye/eye pain.

Congestive Heart Failure

Question 66

Which of the following is not an aggravating factor of congestive heart failure?

Hypertension
Thyrotoxicosis
Alcohol
Inactivity
Arrhythmia

The correct answer is d)

Explanation:
Congestive heart failure can be caused by a number of conditions that damage the heart muscle, including a heart attack or heart infection; coronary artery disease; excessive alcohol consumption; an over- or under-active thyroid gland; and untreated high blood pressure.

Congestive heart failure can also be caused by damage to or abnormalities in the valves inside the heart, which regulate blood flow out of the heart, and genetic conditions, such as hypertrophic cardiomyopathy, in which the heart muscle becomes thickened due to enlarged heart muscle cells.

Factors such as high fever, anemia, lung infections, pulmonary embolism, high salt or fluid intake, overexertion, obesity, stress, and rapid heartbeat can worsen or trigger congestive heart failure in people with already weakened hearts.

Question 67

the Which one of nsidered a contraindication to the use of beta-blockers for congestive

Mild asthma
Symptomatic heart block
New York Heart Association (NYHA) Class III heart failure
NYHA Class I heart failure in a patient with a history of a previous myocardial infarction
An ejection fraction < 30%The

correct answer is b)

Explanation:
According to several randomized, controlled trials, mortality rates are improved in patients with heart failure, who receive beta-blockers in addition to diuretics, ACE inhibitors, and occasionally, digoxin. Contraindications to beta-blocker use include hemodynamic instability, heart block, bradycardia, and severe asthma. beta-blockers may be tried in patients with mild asthma or COPD as long as they are monitored for potential exacerbations. Beta-blocker use has been shown to be effective in patients with NYHA Class II or III heart failure. There is no absolute threshold ejection fraction. Beta-blockers have also been shown to decrease mortality in patients with a previous history of myocardial infarction, regardless of their NYHA classification.

Question 68

Which one of the following would be a contraindication to initiating beta-blocker therapy in a patient with congestive heart failure?

Class III heart failure (symptoms with less than ordinary exertion)
Left ventricular systolic dysfunction (ejection fraction < 40%)
Current digoxin use
Recent hospital admission for decompensated heart failureThe

correct answer is d)

Explanation:
In general, it is advisable to avoid initiating Beta-blocker therapy during or immediately after admission for decompensated heart failure.
None of the other situations would contraindicate its initiation.

Question 69

Which one of the following is preferrer (lowers mortality) for chronic treatment of congestive heart failure due to left ventricular systolic dysfunction?

Diuretics
Digoxin
Calcium channel blockers
ACE inhibitors
Hydralazine (Apresoline) plus isosorbide dinitrate (Isordil, orbitrate)The

correct answer is d)

Explanation:
ACE inhibitors are the preferred drugs for congestive heart failure due to left ventricular systolic dysfunction, because they are associated with the lower mortality. The combination of hydralazine/isosorbide dinitrate is a reasonable alternative, and diuretics should be used cautiously. Itis not known whether digoxin affects mortality, although it can help with symptoms.

Question #70

Question 70

A 72-year-old male with class III congestive heart failure (CHF) due to systolic dysfunction asks if he can take ibuprofen for his “aches and pains.”

Appropriate counseling regarding NSAID use and heart failure should include which one of the

NSAIDs are a good choice for pain relief as they decrease systemic vascular resistance
NSAIDs are a good choice for pain relief as they augment the effect of his diuretic
High-dose aspirin (325 mg/day) is preferable to other NSAIDs for patients taking ACE inhibitors
NSAIDs, including high-dose aspirin, should be avoided in CHF patients because they can cause fluid retention

The correct answer is d)

Explanation:
If possible, NSAIDs should be avoided in patients with heart failure. They cause sodium and water retention as well as an increase in systemic vascular resistance which may lead to cardiac decompensation. Patients with heart failure who take NSAIDs have a tenfold increased risk of hospitalization for exacerbation of their CHF. NSAIDs alone in patients with normal ventricular functionhave not been associated with initial episodes of heart failure.

NSAIDs, including high-dose aspirin (325 mg/day) may decrease or negate entirely the beneficial unloading effects of ACE inhibition. They have been shown to have a negative impact on the long-term morbidity and mortality benefits that ACE inhibitors provide. Sulindac and low-dose aspirin (81 mg/day) are less likely to cause these negative effects.

Question 71

Patients with symptomatic congestive heart failure associated with a reduced systolic ejection fractionor left ventricular remodeling should be initially treated with which one of the following agents?

An ACE inhibitor
Hydralazine (Apresoline)
Warfarin (Coumadin)
Amiodarone (Cordarone)
Verapamil (Calan, Isoptin)The

correct answer is a)

Explanation:
It has been shown that congestive heart failure (CHF) patients treated with ACE inhibitors survive longer, and all such patients should take these agents if tolerated.

Warfarin and /or antiarrhythmic drugs should be given only to selected CHF patients.
Verapamil may adversely affect cardiac function and should be avoided in patients with CHF.
Hydralazine can be used, but because of its side effects profile would be a second-line agent.

Question 72

A 73-year-old male with COPD presents to the emergency department with increasing dyspnea. Examination reveals no sign of jugular venous distention. A chest examination reveals decreased breath sounds and scattered rhonchi, and the heart sounds are very distant but not gallop or murmur is noted. There is +1 edema of the lower extremities. Chest radiographs reveal cardiomegaly but no pleural effusion. The patient's B-type natriuretic peptide level is 850 pg/mL (N < 100) and his serum creatinine level is 0.8 mg/dL (N 0.6 - - - 1.5).

Which one of the following would be the most appropriate initial management?

Intravenous heparin
Tiotropium (Spiriva)
Levalbuterol (Xopenex) via nebulizer
Prednisone, 20 mg twice daily for 1 week
Furosemide (Lasix), 40 mg intravenouslyThe

correct answer is e)

Explanation:
B-type natriuretic peptide (BNP) is secreted in the ventricles and is sensitive to changes in left ventricular function. Concentrations correlate with end-diastolic pressure, which in turn correlates with dyspnea and congestive heart failure. BNP levels can be useful when trying to determine whetherdyspnea is due to cardiac, pulmonary, or deconditioning etiologies. A value of less than 100 pg/mL excludes congestive heart failure as the cause for dyspnea. If it is greater than 400 pg/mL, the likelihood of congestive heart failure is 95%. Patients with values of 100 --- 400 pg/mL need further investigation.

There are some pulmonary problems that may elevate BNP, such as lung cancer, cor pulmonale, and pulmonary embolus. However, these patients do not have the same extent of elevation that those with acute left ventricular dysfunction will have. If these problems can be ruled out, then individualswith levels between 100 --- 400 pg/mL most likely have congestive heart failure. Initial therapy shouldbe a loop diuretic. It should be noted that BNP is partially excreted by the kidneys, so levels are inversely proportional to creatinine clearance.
BNP levels above 600 pg/mL indicate moderate heart failure.
BNP levels above 900 pg/mL indicate severe heart failure.

Explanation:

Question 73

Aortic stenosis
Significant systemic hypertension
Idiopathic hypertrophic subaortic stenosis
Pulmonary hypertension
Atrial fibrillation

The correct answer is e)

Explanation:
The S4 is a rare extra heart sound that occurs immediately before the normal.It is caused by the atria contracting forcefully in an effort to overcome an abnormally stiff or hypertrophic ventricle. Classically,it is compared to the cadence of the word "Tennessee" or the phrase "a-STIFF-wall". With "Ten" and "a" representing S4 respectively.

All of the listed clinical situations can exhibit an S4 gallop except atrial fibrillation (choice E), since no atrial "kick" is present to produce the gallop sound.

→ Aortic stenosis (choice A), Significant systemic hypertension (choice B), Idiopathic hypertrophic subaortic stenosis (choice C), and Pulmonary hypertension (choice D), are often associated with S4.

Question 74

A 60-year-old male with a 10-year history of reasonably well-controlled type 2 diabetes mellitus hyperlipidemia, and hypertension presents to your office for follow-up. He complains of dyspnea on exertion and swelling of his lower legs and feet. He has not had any chest pain. His current medications inclu

He is moderately overweight, with a BMI of 29, and his blood pressure is 150/95 mm Hg. Examination reveals a few moist rales in both lung bases, a soft S3 heart sound, and 3+ pretibial and pedal edema. A chest radiograph reveals mild cardiomegaly and cephalization of the pulmonary vasculature. Echocardiography reveals an ejection fraction of 25%, with dyskinesia of the anterior left ventricularwall and mild mitral insufficiency.

Therapeutic agents that have been shown to improve survival in such cases include all of the following,

Lisinopril (Prinivil, Zestril)
Valsartan (Diovan)
Digoxin
Metoprolol (Lopressor)The

correct answer is c)

Explanation:

This patient has systolic heart failure, most likely related to a silent myocardial infarction, and exacerbated by hypertension. Digoxin improves symptoms and decreases hospitalizations due to heartfailure, but does not prolong survival. ACE inhibitors, angiotensin receptor blockers, and beta-blockers have all been shown to improve survival in heart failure.

Question 75

A 67-year-old woman with a history of heart failure comes to see you today. Her brother is a physician and he told her to ask you to put her on a medication which will most likely reduce both preload and afterload.

Which of the following would you choose if you followed her brother's request?

Hydralazine
Isosorbide dinitrate
Furosemide
Dobutamine
Captopril

The correct answer is e)

Explanation:
Drugs that reduce both preload and afterload include nitroprusside, prazosin, ACE inhibitors and angiotensin II receptor blockers. These agents reduce ventricular filling pressures by facilitating venous pooling and improve cardiac output by reducing total peripheral resistance.

Hydralazine and minoxidil reduce afterload by relaxing arteriolar smooth muscle.
The venodilators and diuretics are used to decrease preload. The venodilators include nitroglycerineand isosorbide dinitrite.
Diuretics like furosemide, bumetanide and hydrochlorothiazide are used to reduce blood volume, thus reducing preload.
Dobutamine increases myocardial contractility with no substantial alteration of total peripheral resistance.

Note: Nitroglycerin: --- Venodilation predominates at therapeutic doses which reduces preload. Arteriodilation at high doses (high therapeutic/toxic) which produces hypotension compensated by sympathetics (heart/vascular)to produce tachycardia.

Question 76

A 55-year-old male has heart failure. He becomes dyspneic with significant exertion. His only medication is an ACE inhibitor. Which one of the following additional medications has been shown to improve longevity in this situation?
Digitalis
Warfarin (Coumadin)
Beta-Blockers
Amiodarone (Cordarone)
Nondihydropyridine calcium channel blockersThe

correct answer is c)

Explanation:
Beta-Blockers are recommended to reduce mortality in symptomatic patients with heart failure (SOR A). Because polypharmacy can reduce compliance, the role that digoxin will ultimately play in heart failure is unclear. The Digitalis Investigation Group study revealed a trend toward increased mortalityamong women with heart failure who were taking digoxin, but digoxin levels were higher among women than men. There is no evidence that warfarin decreases mortality in patients with heart failure. There is also no evidence that amiodarone decreases mortality from heart failure in patients with no history of atrial fibrillation.

Calcium channel blockers should be used with caution in patients with heart failure because they can cause peripheral vasodilation, decreased heart rate, decreased cardiac contractility, and decreased cardiac conduction.

Question 77

A 48-year-old Caucasian who comes to the emergency department at the insistence of his wife. He has been suffering from progressive shortness of breath over the past few weeks. He now has a dry cough, pleuritic chest pain, palpitations and swelling to both feet. He has a 10-year history of alcohol abuse, he says he drinks every evening after work and sometimes on the weekends. The physician on call does a full examination and then orders some investigations. Results are shown below:

CXR · · · heart is globally enlarged, blunting of costo-phrenic angles seen
Spiral CT with contrast - - - filling defects at the bifurcation and within the pulmonary arteries.ECG · · · poor R wave progression and a non-sustained ventricular tachycardia Echocardiogram - - - left ventricular dilatation and dysfunction

What is the most likely diagnosis to explain his symptoms and these results?
Pulmonary embolism
Alcoholic Cardiomyopathy
Congestive Heart Failure
Hyperthyroidism
Alcohol Withdrawal The

correct answer is b)

Explanation:
Dilated cardiomyopathy has several etiologies, with chronic alcohol use being one of them. It may present as congestive heart failure, systemic or pulmonary emboli, arrhythmias or sudden death. The above patient has a symptoms and evidence of congestive heart failure, pulmonary embolus and cardiac arrhythmia. Combined with his history of chronic alcohol use the best explanation is Alcoholic Cardiomyopathy (choice B).

→ Pulmonary Embollism (choice A) --- while the spiral CT results match this diagnosis, the ECG changes demonstrated in this patient are not characteristic of a pulmonary embollus. Nor would this diagnosis explain the chest radiograph and echocardiogram results obtained. Furthermore, acute PE would cause abrupt onset of pleuritic chest pain, shortness of breath, and hypoxia.
→ Congestive Heart Failure (choice C) --- this patient does have congestive heart failure, however we can form a more specific diagnosis than this, given the history provided on the patient. As it is also nothis only diagnosis based on investigations performed, the best diagnosis here is one which relates the findings of all of his investigations with his history and examination findings.
→ Hyperthyroidism (choice D) --- this might explain the palpitations, however it does not explain the dyspnea and edema. It would also not result in the CXR and CT and Echocardiogram findings.
→ Alcohol Withdrawal (choice E) --- while it is true that given the patient's history of alcohol use, he would be expected to enter withdrawal if he stopped drinking, he has given no history of discontinuinghis alcohol consumption recently, nor would this explain the progressive dyspnea and edema which heis experiencing.

Key point:
Chronic alcohol abuse is a cause of dilated cardiomyopathy. A history of chronic alcohol abuse, combined with findings of congestive hypertension, arrythmias and pulmonary embollus, suggests dilated cardiomyopathy.

Question 78

A woman is attacked by a bee. She comes to emergency room with hypotension, tachycardia and visible allergic reaction with swelling.
What is the most appropriate initial drug management?

Antihistamine
Saline perfusion
Epinephrine injection
Intubation
IV steroid

The correct answer is c)

Explanation:
Anaphylactic reactions (anaphylaxis) are sudden, widespread, potentially severe and life-threatening allergic reactions.

Anaphylactic reactions begin within 1 to 15 minutes of exposure to the allergen. Rarely, reactions begin after 1 hour. The heart beats quickly. The person may feel uneasy and become agitated. Blood pressure may fall, causing fainting. Other symptoms include tingling (pins-and-needles) sensations, itchy and flushed skin, throbbing in the ears, coughing, sneezing, hives, and swelling (angioedema).

If an anaphylactic reaction occurs, an epinephrine injection should be given immediately.

Question 79

A 16-year-old girl is brought to hospital by her frantic parents after a bee sting. Vital sings are BP 70/40 mmHg, RR 30/min and laboured, HR 140/min, T 37.5°C.

Which of the following would not be an option in her management?

Epinephrine
Diphenhydramine
Methylprednisolone
Salbutamol
Atropine

The correct answer is a)

Explanation:
Anaphylactic reactions (anaphylaxis) are sudden, widespread, potentially severe and life-threatening allergic reactions. If an anaphylactic reaction occurs, an epinephrine injection should be given immediately. People who have these reactions should always carry a self-injecting syringe of epinephrine and antihistamine tablets for prompt treatment.

Atropine would not be appropriate, since it would raise her heart rate, which is already tachycardic.

Question 80

Thiazide diuretics are the first choice for which of the following patients?

Hypertensive alcoholic with malnutrition
Hypertensive with diabetes
Hypertensive with gout
Hypertensive elderly patient
Hypertensive with left ventricular hypertrophyThe

correct answer is d)

Explanation:
In most instances, low-dose diuretic therapy should be used as initial antihypertensive therapy in the elderly. A thiazide diuretic is often the first drug given to treat high blood pressure. Diuretics also helpthe kidneys eliminate salt and water, decreasing fluid volume throughout the body and thus lowering blood pressure. Diuretics are particularly useful for blacks, older people, obese people, and people with heart failure or chronic kidney failure.

Thiazide diuretics are contraindicated in patients with gout.

Thiamine, ACEI and beta-blocker are the treatments of choice for hypertensive patients that are alcoholics, diabetics and those with LVH, respectively.

Question 81

A 43-year-old man who is being treated with hydrochlorothiazide (HCTZ) for control of mild edema presents complaining of malaise, fatigue, muscular weakness, and muscle cramps.

Which one of the following is the most likely cause of the patient's symptoms?

Hyperglycemia
Hyperuricemia
Drug hypersensitivity
Hyperkalemia
Hypokalemia

The correct answer is e)

Explanation:
HyperGLUC is a mnemonic used to remember the side effects of Hydrochlorothiazide (HCTZ). GLUC stands for hyperglycemia, hyperlipidemia, hyperuricemia, and hypercalcemia.

Thiazide diuretics increase the excretion of water by inhibiting the reabsorption of sodium and chloride ions at the distal renal tubule. The natriuretic effects are accompanied by a secondary loss ofpotassium and bicarbonate which can cause a mild hypokalemic, hypochloremic, metabolic alkalosis. The changes in plasma volume induce an elevation in plasma renin activity and aldosterone secretionwhich contributes to the potassium losses associated with thiazide diuretics.

Question 82

Propranolol can be used in all of the following, except:

Lithium induced tremor
Panic attack
Hypoglycemia
Hypertension
Angina

The correct answer is c)

Explanation:
Propranolol is a beta-blocker used to treat chest pain (angina), high blood pressure, irregular heartbeats, migraine headaches, tremors and anxiety.

Beta-blockers can cause hypoglycemia or hyperglycemia. Also, beta-blockers can blunt some of the body's responses to hypoglycemia such as rapid heart rate, thus making it difficult for patients to recognize (and treat) hypoglycemic reactions.

Question 83

An elderly woman who has hypertension and diabetes would benefit most from which of the following med

Metoprolol
Amlodipine
Hydrochlorothiazide
Benazepril

The correct answer is d)

Explanation:
Angiotensin-converting enzyme (ACE) inhibitors lower blood pressure in part by dilating arterioles. They dilate arterioles by preventing the formation of angiotensin II, which causes arterioles to constrict. Specifically, these inhibitors block the action of angiotensin-converting enzyme, which converts angiotensin I to angiotensin II.

These drugs are particularly useful for people with coronary artery disease or heart failure, whites, young people, people with protein in their urine because of chronic kidney disease or diabetic kidneydisease, and men who develop sexual dysfunction as a side effect of another antihypertensive drug.

Question #84
QID: 2817
Topic: HTN, DM
Subject: Medicine

Which one of the following drug classes is preferred for treating hypertension in patients who also have

Centrally-acting sympatholytics
Alpha-blocking agents
Beta-blocking agents
ACE inhibitors
Calcium channel blockersThe

correct answer is d)

Explanation:
ACE inhibitors have proven beneficial in patients who have either early or established diabetic renal disease. They are the preferred therapy in patients with diabetes and hypertension, according to

guidelines from the National Kidney Foundation, the World Health Organization.

Question 85

A 59-year-old white female has a blood pressure consistently at or above 140/90 mm Hg. Her only other significant medical problem is diabetes mellitus, which is controlled by diet.

Which one of the following is the most clearly established advantage of angiotensin receptor blockers (ARBs) when compared with ACE inhibitors in patients such as this?
Reduced risk of persistent cough
Reduced risk of headache
Reduced risk of heart failure
Improved control of blood pressure
Improved lipid profileThe

correct answer is a)

Explanation:
In multiple studies, angiotensin receptor blockers (ARBs) have been shown to be less likely to cause a chronic cough when compared with ACE inhibitors. Although this is not a life-threatening danger, it is a side effect that can be persistent and lead to discontinuation of medication. Angioedema, a more dangerous side effect, was thought to be ACE-inhibitor specific. However, it is rare and there is not yet good evidence that ARBs are safer. There have been case reports of angioedema associated with ARB use. The incidence of headache is similar for the two drug classes. ARBs have not been proven superiorto ACE inhibitors in blood pressure control, effects on lipid profiles, or prevention of heart failure, and there is substantially more data on ACE inhibitors for the prevention of heart failure and proteinuria.

Question 86

The blood pressure goal for a patient who has uncomplicated diabetes mellitus is:

130/80 mm Hg
140/90 mm Hg
120/90 mm Hg
110/85 mm Hg
150/70 mm Hg

The correct answer is a)

Explanation:
Patients with diabetes should be treated to achieve a blood pressure < 130/80 mm Hg (choice A). The revisions of these recommendations were completed through collaboration with the Canadian

Question 87

A 15-year-old presents with blood pressure of 155/90 mmHg on routine physical exam. He denies any symptoms. What is the most appropriate management?

Low sodium diet
Start a diuretic
Repeat measurement on two more occasions
Order an EKG

The correct answer is c)

Explanation:
In the diagnosis of hypertension it is important to have at least three high blood pressure readings before the start of drug treatment.

Question 88

You are measuring the blood pressure in an adult patient with suspected hypertension. Which one of the following is recommended for an accurate measurement?

Place the cuff so that the lower edge is 3 cm above the elbow crease and the bladder is centered over the radial artery
Choose a cuff with bladder lenght about 40% of arm circumference
Increase the pressure rapidly to 30 mmHg above the level at which the radial pulse is extinguished

Open the control valve so that the rate of deflation of the cuff is approximately 10 mmHg per heartbeat
Record the pressure at which the pulse first appears --- diastolic pressureThe

correct answer is c)

Explanation:
Choose a cuff with an appropriate bladder size matched to the size of the arm. Adult Cuff size: Cuff Width: 40% of limb's circumference; Cuff Length: Bladder at 80% of limb's circumference.
Place the cuff so that the lower edge is 3 cm above the elbow crease and the bladder is centered over the brachial artery. The patient should be resting comfortably for 5 minutes in the seated position with back support. The arm should be bare and supported with the BP cuff at heart level.
Increase the pressure rapidly to 30 mmHg above the level at which the radial pulse is extinguished.
Place the bell or diaphragm of the stethoscope gently and steadily over the brachial artery.
Open the control valve so that the rate of deflation of the cuff is approximately 2 mmHg per heart

Read the systolic level --- the first appearance of a clear tapping sound (phase I Korotkoff) --- and the diastolic level (*the point at which the sounds disappear (phase V Korotkoff)). If Korotkoff sounds persist as the level approaches 0 mmHg, then the point of muffling of the sound is used (phase IV) toindicate the diastolic pressure.
To avoid venous congestion, it is recommended that at least one minute should elapse between readings.
Record the blood pressure to the closest 2 mmHg on the manometer
Record the heart rate.

Question 89

A 43-year-old woman has an elevated blood pressure that was first detected during a routine screening at health fair in a local shopping mall. When she came to see you, a week after that, her blood pressure was 145/95 mm Hg. Today, 1 year later, she is asymptomatic and her blood pressure is130/85 mm Hg. She is continuing to take the prescribed antihypertensive medication.

Which of the following is the most appropriate management at this time?

Continue the antihypertensive therapy
Discontinue the antihypertensive therapy
Order a chest x-ray film and electrocardiography
Order complete blood count, serum electrolyte concentrations and liver chemistry profile
Reduce the dosage of the antihypertensive medication by 50%The

correct answer is a)

Explanation:
She has fortunately remained asymptomatic with a blood pressure that has declined to the normal range. She most likely suffers from essential hypertension and, since this is a lifelong disorder, she will most likely require long-term antihypertensive therapy and therefore discontinuing it and reducing the dose are inappropriate at this time.

Question 90

A 67-year-old white male sees you for a new patient visit. He is asymptomatic and has not seen a doctor in 5 years. He does not smoke or drink and takes no medication. He says he has a history of "mild high blood pressure" but has never been treated for this. His blood pressure today is 180/90 mmHg. He has a decreased arteriovenous ratio on fundoscopic examination, his point of maximal intensity is displaced laterally, and he has decreased pedal pulses.

The most appropriate management at this point would be to:
Perform two blood pressure measurements 1 week apart to establish the diagnosis of hypertension
Order ambulatory blood pressure monitoring
Order a laboratory workup
Order an exercise stress test
Doppler flow ultrasonographyThe

correct answer is c)

Explanation:
Since there is no previous information on this patient, obtaining baseline laboratory results (routine laboratory studies) is recommended. Initial laboratory tests may include urinalysis; fasting blood glucose or A1c; hematocrit; serum sodium, potassium, creatinine (estimated or measured glomerularfiltration rate), and calcium; and lipid profile. Other studies may be obtained on the basis of clinical findings or in individuals with suspected secondary hypertension and/or evidence of target-organ disease, such as complete blood count (CBC), chest radiograph, uric acid, and urine microalbumin.

Elevated blood pressure along with physical findings of cardiovascular disease establishes the diagnosis of hypertension in this patient, so it is not necessary to take follow-up blood pressure readings prior to starting treatment. Because he has Stage 3 hypertension with evidence of end-organ disease, treatment with antihypertensives (a thiazide diuretic as the first line treatment) is indicated.

Question 91

An 83-year-old female presents to your office as a new patient. She recently moved to the area to be closer to her family. A history reveals that she has been in excellent health, has no complaints, and is on no medication except occasional acetaminophen for knee pain. She has never been in hospital andhas not had any operations. She says that she feels well.
The examination is normal, with expected age-related changes, except that her blood pressure on three different readings averages 174/70 mm Hg. These readings are confirmed on a subsequent follow-up visit.

In addition to lifestyle changes, which one of the following would be most appropriate for the initial management of this patient's hypertension?
An alpha-blocker
An ACE inhibitor
A beta-blocker
An angiotensin receptor blocker
A thiazide diuretic The

correct answer is e)

Explanation:
Clinical trials support the treatment of systolic hypertension in the older person with a systolic blood pressure of at least 150 mm Hg. Systolic hypertension is defined as systolic blood pressure of at least 140 mm Hg and a diastolic blood pressure of less than 90 mm Hg. The studies most strongly support the use of thiazide diuretics and long-acting calcium channel blockers as first-line therapy.

→ Alpha-blockers are not recommended.

→ ACE inhibitors, beta-blockers, and angiotensin receptor blockers are used when certain compelling indications are present, e.g. in a patient with diabetes or who has had a myocardial infarction.

Question 92

Which one of the following agents is associated with the greatest risk for rebound hypertension if discontinued abruptly?

Clonidine (Catapres)
Captopril (Capoten)
Hydrochlorothiazide
Losartan (Cozaar)
Diltiazem (Cardizem)The

correct answer is a)

Explanation:
Clonidine is the classic example of an antihypertensive agent associated with rebound hypertension on withdrawal. Guanfacine, another a2-adrenergic agonist, has also been associated with rebound hypertension on abrupt withdrawal.

Although blood pressure will often gradually rise to pretreatment levels when treatment with diuretics, calcium channel blockers, ACE inhibitors, and angiotensin receptor blockers is stopped, a rebound increase in blood pressure would not be expected.

Question 93

According to the Eigth Report of the Joint National Committee on Prevention, Detection, Evaluation,and Treatment of High Blood Pressure (JNC-8), which one of the following should be first-line treatment for otherwise healthy older adults with hypertension?
ACE inhibitors
Beta-blockers
Calcium channel blockers
Thiazide diuretics
Alpha-blockers

The correct answer is d)

Explanation:
JNC 8 panel recommended thiazide-type diuretics (choice D) as initial therapy for most patients. Although ACE inhibitors (choice A), ARBs, and calcium channel blockers (CCBs) (choice C) are acceptable alternatives, thiazide-type diuretics still have the best evidence of efficacy.

The JNC 8 panel does not recommend first-line therapy with beta-blockers (choiceB) and alpha-

blockers (choice E) due to 1 trial that showed a higher rate of cardiovascular events with use of beta-blockers compared with use of an ARB, and another trial in which alpha-blockers resulted in inferior cardiovascular outcomes compared with use of a diuretic. In addition, a lack of evidence comparing the 4 first-line therapies with carvedilol, nebivolol, clonidine, hydralazine, reserpine, furosemide, spironolactone, and other similar medications precludes use of any medications other than ACE inhibitors, ARBs, CCBs, and thiazide-type diuretics in the vast majority of patients.

Question 94

A 63-year-old male with uncontrolled hypertension comes to see you with complaints of weight gain and feeling tired. Lab results show low hemoglobin and low ferritin levels.

What is the possible reason for his hypertension?

Hyposecretion of aldosterone
Normochromic anemia
Increased blood supply to renal arteries
Decreased blood supply to renal arteries
Decreased tissue peripheral resistanceThe

correct answer is d)

Explanation:
Answer: D --- Decreased blood supply to renal arteries is one of the reasons for the hypertension. Decrease in the blood supply to renal arteries stimulates the renin-angiotensin system. Renin converts angiotensinogen to angiotensin I which is then converted to angiotensin II in the presence of angiotensin converting enzyme. Angiotensin II is a powerful vasoconstrictor, which results in increase of blood pressure. Angiotensin also stimulates the adrenal cortex for the release of aldosterone.
Aldosterone decreases the reabsorption of the sodium from the blood and increases the retention of itin blood. Increased retention of the sodium in blood would increase the blood volume and further increase the blood pressure.

Hyposecretion of aldosterone would result in hypotension.
He has hypochromic anemia.
Increased blood supply to renal arteries does not stimulate the renin-angiotensin system.
E. Decreased tissue peripheral resistance leads to hypotension.

Question 95

A 65-year-old male smoker presents with stage I hypertension. The patient has diabetes mellitus, obesity and renal disease. What is the best medication of choice for treatment of this patient?
Hydrochlorothiazide
Propranolol Nitroprusside
Captopril
Methyldopa

The correct answer is d)

Explanation:
Captopril (choice D) and ACE-inhibitors in general are the best medication for the treatment of stage I hypertension in diabetic patients. Captopril inhibits angiotensin converting enzyme, which converts of angiotensin I to angiotensin II. Captopril is most widely used medication for hypertension because of its efficient reduction of hypertension through renin-angiotensin system. Since the patient already has renal disease and diabetes, captopril is the ideal medication when compared to others. It is given as 6.25 mg thrice a day initially and increased gradually from 25-150 mg based on the requirement and dose response. Patients with more advanced nephropathy may experience greater benefits from these medications than patients with mild nephropathy.

Patients who initiate ACE inhibitor (and presumably ARB) therapy should have creatinine levels checked shortly after starting the medication, and serum potassium levels should be monitored for hyperkalemia while the patient receives the medication. Acute renal failure is a concern with initiationof ACE-inhibitors an increase of ≥0.5 mg/dL (44 µmol/L) if the serum creatinine was initially < 2.0 mg/dL or ≥ 1.0 mg/dL if the serum creatinine was above 2.0 mg/dL can be used as a useful working definition. 10% to 20% increased in creatinite can generally be noted in patients who start ACE-inhibitors, and this in itself is no indication to discontinue treatment. It should be emphacized here that ACE-inhibitors are few of the best drugs proven to reduce mortality in hypertensive patients with diabetes and while kidney function should be regularly monitored in these patients, they are still the best renoprotective drugs available.

→ Borderline renal and/or hepatic insufficiency may be aggravated by hydrochlorothiazide (choice A).
→ Propranolol (choice B) is a non selective beta-blocking agent; can mask hypoglycemia.
→ Nitroprusside (choice C) has decreased efficacy in renal failure. Toxic levels of cyanide build up rapidly in patients with renal failure.
→ Methyldopa (choice D) is also not as good as ACE-inhibitors in managing hypertensive patients with diabetes.
All these incorrect answers while they may reduce the blood pressure, ACE-inhibitors are the drugs actually proven to reduce mortality and morbidity in hypertensive patients with diabetes.

Question 96

A 62-year-old diabetic male comes in for high blood pressure follow up. Patient has history of obesity and angina pectoris. Last visit's blood pressure readings have shown 160/100 mmHg. Today, his blood pressure is 140/90 mmHg. You decide to start him on a medication to treat his hypertension.

Given his past medical history and diagnosis, what would be the best choice of the following?

Propranolol
Lisinopril
Amlodipine
Hydralazine
Telmisartan

The correct answer is b)

Explanation:
The goals of pharmacotherapy are to reduce morbidity and to prevent complications. Given this patient's medical history, an angiotensin-converting enzyme (ACE) Inhibitor would be the best choice option to treat his hypertension. ACEIs have been shown to reduce rates of death, MI, stroke, and need for revascularization procedures in patients with coronary artery disease or diabetes mellitus andat least one other cardiovascular risk factor, irrespective of the presence of hypertension or heart failure.

Question 97

A 60-year-old black female has a history of hypertension that has been well controlled with hydrochlorothiazide. However, she has developed an allergy to the medication. Successful monotherapy for her hypertension would be most likely with which one of the following?
Lisinopril (Prinivil, Zestril)
Hydralazine (Apresoline)
Clonidine (Catapres)
Atenolol (Tenormin)
Diltiazem (Cardizem)The

correct answer is e)

Explanation:
Monotherapy for hypertension in black patients is more likely to consist of diuretics or calcium channel blockers than beta-blockers or ACE inhibitors. It has been suggested that hypertension in blacks is not as angiotensin II-dependent as it appears to be in Caucasians.

Question 98

A 35-year-old Caucasian male has a blood pressure of 142/88 mm Hg, confirmed on repeat measurements. A complete metabolic panel and urinalysis reveal a serum creatinine level of 165 µmol/L (N 70-120 µmol/L), with an estimated glomerular filtration rate of 38mL/min and 2+ protein in the urine. Which one of the following would be the most appropriate initial treatment for this patientwith a diagnosed CKD?
ACE inhibitors
Aldosterone antagonists
Beta-blockers
Calcium channel blockers
Diuretics

The correct answer is a)

Explanation:
Although JNC-7 guidelines recommend a diuretic as the initial pharmacologic agent for most patients with hypertension, the presence of "compelling indications" may indicate the need for treatment with antihypertensive agents that demonstrate a particular benefit in primary or secondary prevention. JNC-7 guidelines recommend ACE inhibitors (ACEIs) or angiotensin receptor blockers (ARBs) for hypertensive patients with chronic kidney disease.

First-line therapy for proteinuric kidney disease includes an ACEI or an ARB. Because these drugs can cause elevations in creatinine and potassium, these levels should be monitored. A serum creatinine level as much as 35% above baseline is acceptable in patients taking these agents and is not a reason to withhold treatment unless hyperkalemia develops.

If an ACEI or an ARB does not control the hypertension, the addition of a diuretic or a calcium channel blocker may be required.

The combination of ACEIs and diuretics may be used to control hypertension in patients with diabetes mellitus, heart failure, or high coronary disease risk, as well as post myocardial infarction.

Calcium channel blockers are recommended for managing hypertension in patients with diabetes orhigh coronary disease risk.

Beta-blockers are useful as part of combination therapy in patients with hypertension and heart failure, or post myocardial infarction.

Question 99

A 68-year-old female has an average blood pressure of 150/70 mm Hg despite appropriate lifestyle modification efforts. Her only other medical problems are osteoporosis and mild depression. The most appropriate treatment at this time would be:

Lisinopril (Prinivil, Zestril)
Clonidine (Catapres)
Propranolol (Inderal)
Amlodipine (Norvasc)
HydrochlorothiazideThe

correct answer is e)

Explanation:
Randomized, placebo-controlled trials have shown that isolated systolic hypertension in the elderly responds best to diuretics, and to a lesser extent beta-blockers. Diuretics are preferred, although long-acting dihydropyridine calcium channel blockers may also be used. In the case described, beta-blockers or clonidine may worsen the depression. Thiazide diuretics may also improve osteoporosis, and would be the most cost-effective and useful agent in this instance. β-blockers seem to be less effective for cardiovascular disease protection in comparison with other antihypertensive drug classes

Question 100

A 45-year-old man presents with acute pleuritic chest pain. He is sitting up in bed leaned forward when you enter the examining room. Physical exam reveals a friction rub on cardiac exam.
Which of the following is appropriate in treatment?

Antiarrhythmic
Beta-blocker
Albuterol
Naproxen

The correct answer is d)

Explanation:
Pericarditis is inflammation of the pericardium, often with fluid accumulation. Pericarditis may be caused by many disorders (eg, infection, MI, trauma, tumors, metabolic disorders) but is often idiopathic. Symptoms include chest pain or tightness, often worsened by deep breathing. Unlike ischemic chest pain, pain due to pericarditis is usually aggravated by thoracic motion, cough, breathing, or swallowing food; it may be relieved by sitting up and leaning forward.

Diagnosis is based on symptoms, a friction rub, ECG changes, and evidence of pericardial fluid accumulation on x-ray or echocardiogram. Finding the cause requires further evaluation. Treatment depends on the cause, but general measures include analgesics (eg codeine), anti-inflammatory drugs (eg naproxen), and sometimes surgery.