

1. In Pulmonary Embolisms which is correct
 - a) Symptoms of PE appear only when at least 40% of lung vasculature becomes occluded
 - b) Ambulatory ED patients have less concomitant image-demonstrated DVTs compared to hospitalized patients
 - c) Pulmonary embolism should always cause a hypoxia due to VQ mismatch
 - d) Apical segments are more likely to be involved compared to posterobasal segments

2. Which is **not** an independent risk factor for PE
 - a) Inflammatory bowel disease such as Ulcerative colitis
 - b) Nephrotic syndrome
 - c) Smoking
 - d) Obesity

3. Which of the following does **not** score ≥ 1 point in the WELLS criteria for PE
 - a) Exogenous estrogen
 - b) Hemoptysis
 - c) Heart rate 110
 - d) Immobilized for 3 days from pain due to sciatica

4. Which feature on history or examination would make the risk of PE $< 3\%$ as per the PERC rule if all other criteria was negative
 - a) Pre-test probability is 20% risk of PE
 - b) Immobilized for 3 days from pain due to sciatica
 - c) Saturation 94% on room air
 - d) Age 51 years old

5. Which clinical symptom or sign is most often present with PE
 - a) Tachycardia HR >100
 - b) Hypoxia sats $<95\%$
 - c) Pleuritic chest pain
 - d) Dyspnea

6. Which ECG finding is the **least** likely to be present in PE
 - a) Sinus tachycardia rate > 100
 - b) T wave inversion in V1
 - c) ST elevation in aVR
 - d) S1Q3T3: Deep S in lead I, Q wave present in lead III, T wave inversion in lead III

7. Which variable will make a false negative D-dimer result
- Liver disease
 - Symptoms lasting over 10 days
 - Rheumatoid arthritis
 - Age 75
8. Regarding massive PE which is **not** correct
- SBP < 90 has a 50% mortality
 - SBP < 90 for 15 minutes is considered a massive PE
 - If only low dose inotropic support is need (ie. Noradrenaline < 5mcg/min) Massive PE is excluded
 - Symptomatic bradycardia of <40 bpm is a criteria for massive PE
9. In thrombolysis of submassive PE which is correct
- Proven long term mortality benefit
 - RV dysfunction has no effect on short term mortality
 - Elevated troponin levels do no increase mortality in PE
 - 30 day mortality of 6% despite thrombolysis
10. Regarding Malignant Hypertension which is **not** correct
- Diagnosis must have symptoms of end organ damage including APO and ischemic chest pain
 - Rare with diastolic pressure < 130
 - Rare in hypertension secondary to renal disease
 - Can occur with abrupt withdrawal of antihypertensive drugs
11. Regarding dissection of the thoracic aorta which is true
- 5% of patients do not have pain as a feature
 - >90% have a SBP > 150
 - Stanford Type B is the most common dissection
 - >60% have a BP discrepancy of >20mmHg between left and right arms
12. Anatomically which is **incorrect** regarding aortic dissections
- DeBakey type 2 and Stanford type A are located in the ascending aorta
 - 80% of aortic dissections arise from aneurysms
 - DeBakey type 3 begins distal to the left subclavian artery
 - Dissection splits the aorta between the intima and media

13. In the treatment of thoracic aortic dissection which is recommended
- Surgery should be offered in all Stanford type B dissections
 - Pulse rate target should be between 80 to 100 bpm
 - SBP aim should be 140
 - Beta blockers should be given before vasodilators to avoid reflex tachycardia
14. In hypertensive encephalopathy and hypertension with intracranial bleeds which is correct
- It is uncommon for hypertensive encephalopathy to affect the occipital regions
 - There is good evidence to target a SBP 140 instead of 180 in patients with acute cerebral hemorrhage
 - The Putamen is the most common anatomical area for hypertensive hemorrhages
 - Decreasing MAP more than 10% in hypertensive encephalopathy may lead to ischemic infarction
15. Which neurological deficit is **incorrect** in the type of hypertensive hemorrhage distribution
- Eyes deviate to contralateral side with contralateral hemiplegia - Putamine
 - Aphasia, ipsilateral Horner's, unequal pupils, lateral gaze defect and contralateral hemiplegia – Thalamic
 - Eyes deviate to contralateral side and no paralysis – Cerebellar
 - Mydriasis, contralateral hemiplegia, prominent sensory deficit - Pontine
16. Which is true regarding pulmonary hypertension
- Diagnosis is made with pulmonary artery pressure >25mmHg at rest
 - There is 3 groups in the classification of pulmonary HT
 - Most common cause is idiopathic
 - ECG findings include LBBB and left axis deviation
17. Which is **not** true about features on imaging for Thoracic Aortic Dissections
- Widened Mediastium on CXR is present in 60% of dissections
 - Abnormal aortic contour on CXR is present in 50% of dissections
 - 5% of CXR are completely normal
 - Transthoracic echocardiograms (TTE) can show aortic regurg and tamponade but have much lower sensitivities than Transoesophageal echocardiograms (TOE)
18. Which is true of popliteal aneurysms
- Third most common aneurysm after AAA and splenic
 - Is associated with AAA
 - Rarely bilateral
 - Rupture is more likely than thrombosis or embolization

19. Regarding AAA which is **incorrect**
- a) 90% of cases are due to atherosclerosis
 - b) Mycotic aneurysms due to Salmonella or Staph Aureus are usually saccular
 - c) Suprarenal or Juxarenal occur in 95% of cases
 - d) ≥ 3 cm AAA is diagnostic
20. Palpation of a pulsatile abdominal mass and its sensitive is correct in which situation
- a) 10% for 3-4 cm
 - b) 90% for > 5 cm
 - c) 50% for > 5 cm
 - d) 50% for 4-5 cm
21. Regarding an incidental diagnosis of an un-ruptured AAA
- a) Growth is on average 1 cm per year
 - b) Risk of rupture is 20% if < 6 cm
 - c) Risk of rupture is 80% if > 6 cm
 - d) Size is measured as diameter from intima to intima
22. Regarding Splenic artery aneurysms which is **incorrect**
- a) Third trimester pregnancy is a risk factor
 - b) Men are 4 times more likely to develop splenic aneurysm compared to women
 - c) Portal hypertension is a predisposing factor
 - d) They rarely rupture if $< 2-3$ cm
23. Behind AF which is the second most common source of embolisms from the heart
- a) Left ventricular mural thrombus post AMI
 - b) Mechanical valve thrombus
 - c) Vegetation from valve leaflets
 - d) Tumour emboli from atrial myxomas
24. In the measurement of ankle to brachial index (ABI) which is a true statement
- a) ABI is the MAP of ankle arteries divided by MAP of arm arteries
 - b) ABI of 1.35 is normal
 - c) ABI 0.4 indicates severe disease
 - d) ABI of 0.8 would produce rest pain

Answers

1. B (Symptoms appear when 20-30% of lung vasculature occluded, PE does not always cause VQ mismatch and hypoxia is unpredictable, 2/3 of PE cases involve posterobasal. Pulmonary Embolism DUNN RJ emergencymanual.com 2016)
2. C
3. A (WELLS criteria score ≥ 1 for signs of DVT, PE most likely diagnosis, HR >100 , immobilized for 3 days or surgery within 1 month, previous DVT or PE, hemoptysis, malignancy. Well's criteria for PE mdcalc.com 2016)
4. B (PERC criteria negative: Pre-test probability $<15\%$, age <50 , HR <100 , Saturation $\geq 95\%$ RA, no prior history of DVT or PE, no trauma or surgery within 1 month, no hemoptysis, no exogenous estrogen, no unilateral leg swelling. Also PERC should not be used in pregnancy, malignancy thrombophilia /strong FHx of PE as pretest prob likely $> 15\%$. PERC rule for PE mdcalc.com 2016)
5. D (Dyspnea 85%, pleuritic chest pain 75%, HR > 100 is 50%, hypoxia is unpredictable, also DUNN states RR > 16 in 90% but RR <20 in 35% and no mention of that RR at any time or all the time. Pulmonary Embolism DUNN RJ emergencymanual.com 2016)
6. D (HR >100 in 40%, T wave inversion in V1 in 40%, STE in aVR in 35%, S1Q3T3 in 25%, AF in 15%, RBBB in 12% and P pulmonale unsure of %. Investigations in PE- non imaging DUNN RJ emergencymanual.com 2016)
7. B (D-dimer has a $\frac{1}{2}$ life of 8 h, Tintinalli states >5 days and DUNN states >10 days as potential false negatives. Deep Vein Thrombosis DUNN RJ emergencymanual.com 2016)
8. C (Massive PE: SBP <90 for 15 min or inotropic support, pulselessness or HR < 40 with shock. LITFL Thrombolysis for submassive pulmonary embolus revised 7/1/2016)
9. D (No proven long term mortality but maybe mortality benefit within 1 week, RV dysfunction and elevated troponin increases OR for short term mortality. LITFL Thrombolysis for submassive pulmonary embolus revised 7/1/2016)
10. C (more common in HT secondary to renal disease. Hypertension DUNN RJ emergencymanual.com 2016)
11. A (only 50% have a SBP > 150 , Stanford Type A in 70%, only 31% have unequal pulses on left vs right arms. Thoracic aortic dissection DUNN RJ emergencymanual.com 2016)
12. B (80% of aortic dissections are in non-aneurysmal vessels. LITFL Acute Aortic Dissection revised 31/12/2015)
13. D (Surgical Mx for all type A but conservative for type B unless leakage or major end organ damage or continued dissection BUT poor outcome from surgery for type B due to compromise of spinal blood flow, Pulse target 60 to 80, SBP target 100 to 110 / 120. DUNN and LITFL)
14. C (Posterior Reversible Encephalopathy Syndrome or PRES occurs with hypertension and commonly involves parieto-occipital oedema, there is no mortality benefit to target SBP 140 vs 180 in intracranial bleeds, Decrease MAP more than 15-20% can cause ischemic infarcts. Intracerebral Haemorrhage DUNN RJ emergencymanual.com 2016. RADIOPIEDIA.ORG Posterior Reversible Encephalopathy Syndrome)
15. D (pontine – deep coma with quadriplegia, pin point pupils, decerebrate rigidity. Intracerebral haemorrhage DUNN RJ emergencymanual.com 2016)
16. A (5 groups in Pulm HT classification 1 – pulm arterial HT idiopathic and uncommon, 2 – pulmonary venous HT valve disease second most common, 3 – Chronic hypoxia COPD most

common, 4 – PTE, 5 – other such as sarcoid. ECG findings included RBBB and RAD. Pulmonary Hypertension DUNN RJ emergencymanual.com 2016)

17. C (CXR normal in 10% to 16% LITFL acute aortic dissection revised 31/12/2015 or up to 37% as per Tintinalli)
18. B (Second most common & most common peripheral aneurysm, 50% bilateral and 1/3 of patients with it have AAA. Popliteal aneurysm DUNN RJ emergencymanual.com 2016)
19. C (95% are infrarenal. Abdominal aortic aneurysm DUNN RJ emergencymanual.com 2016)
20. D (30% for 3-4 cm, 50% for 4-5 cm, 75% for >5cm)
21. B (growth/year 0.4cm, risk of rupture < 20% if < 6 cm, 40% if > 6 cm, diameter is measured outer wall to outer wall. Abdominal aortic aneurysm DUNN RJ emergencymanual.com 2016)
22. B (Women 4 times more likely to develop than men. Other abdominal aneurysms DUNN RJ emergencymanual.com 2016)
23. A
24. C (ABI = SBP of ankle / SBP arm. ABI > 1.3 invalid result due to calcified vessel, ABI 0.9 to 1.3 normal, ABI 0.41 to 0.9 mild to moderate disease claudication, ABI < 0.4 severe disease rest pain or ischemia)