



COURSE EXAM 1 MCQ

Name: _____
Period: 7.30am – 9.30am
Date: Saturday 13th March 2010

You have 2 hours to complete this paper

LONG ANSWER QUESTION (1 HOUR)

You are called to the operating room by an orthopaedic colleague who, in the process of performing a total knee replacement, has noticed significant bleeding on release of the tourniquet. How will you manage this patient?

MULTIPLE CHOICE QUESTIONS (1 HOUR)

1. Identification of *severe* arterial stenoses by duplex scanning depends primarily on which of the following features?
 - A. Visualization of atherosclerotic plaque on the B-mode image.
 - B. Finding a localized high-velocity jet with broadening of the spectral wave form.
 - C. Localized broadening of the spectral wave form without a change in velocity.
 - D. Accentuation of the diastolic reverse-flow phase distal to the stenotic site.
 - E. Damping of the spectral wave form proximal to the stenotic site.

2. CT findings of an aortic dissection include:
 - A. Displacement of intimal calcium.
 - B. Double contrast-filled lumen separated by an intimal flap.
 - C. Left lower lobe atelectasis.
 - D. Enhancing hyperemic rim with chronic dissection.
 - E. All of the above.

3. Which of the following criteria are important for clinical diagnosis of Buerger's disease?
 - A. A history of cigarette smoking.
 - B. Onset before the age of 50 years.
 - C. Aortoiliac arterial occlusions.
 - D. Infrapopliteal arterial occlusions.
 - E. Hypercholesteremia.
 - F. Either upper-limb involvement or phlebitis migrans.

4. Which pathobiologic feature of atherosclerosis is most likely to result in clinical symptoms?
 - A. Artery enlargement.
 - B. Erosion of the fibrous cap.
 - C. Smooth muscle cell proliferation.
 - D. Cholesterol crystallization in the plaque.
 - E. Calcification of the plaque.

5. Stents have proved to be an important adjunct in management in all the following circumstances *except*:
 - A. Malignant SVC syndrome.
 - B. Angioplasty-induced dissections of iliac arteries.
 - C. Improved long-term patency in superficial femoral artery lesions.
 - D. Eccentric lesions of iliac arteries postangioplasty.
 - E. Chronic iliac artery occlusions.

6. For suturing vessels and performing anastomoses:
 - A. Silk sutures should not be used.
 - B. Monofilament sutures tend to break, so braided sutures should be used in prosthetic anastomoses.
 - C. Only interrupted sutures must be used in children to allow anastomotic growth.
 - D. The depth and separation (travel) of continuous suture placement should generally be equal in dimension.
 - E. The needle should travel "outside in on the artery, inside out on the graft" when anastomosing prostheses of arteriosclerotic arteries.

7. Which of the following patterns of arterial disease are ideally suited to the application of endarterectomy techniques?
 - A. Orifical occlusion disease of the innominate artery with symptoms of distal embolization.
 - B. Combined visceral and renal artery occlusive disease with severe "coral-reef" atherosclerosis of the aorta.
 - C. Bilateral high-grade orifical renal artery stenoses in the presence of a large infrarenal aortic aneurysm.
 - D. A 30-cm occlusion of the superficial femoral artery located just above the adductor hiatus.
 - E. All of the above.

8. Prosthetic grafts constructed of knitted dacron:
 - A. Are the graft of choice for repair of thoracoabdominal aortic aneurysms due to their superior handling qualities.
 - B. Are likely to dilate 10-20% in diameter after chronic implantation.
 - C. Cause less platelet activation than occurs with e-PTFE grafts.
 - D. Have significantly improved patency in small-caliber conduits (6 cm in diameter) when precoated with collagen or albumin.
 - E. Exhibit less host incorporation when fabricated with velour yarns.

9. Causes of early graft thrombosis include which of the following?
 - A. Technical failure.
 - B. Poor patient selection (extensive and uncorrected disease beyond the bypassed segments).
 - C. Graft surface thrombogenicity.
 - D. Hypercoagulable state.
 - E. All of the above.

10. Ischemic neuropathy that is present after repair of acute arterial insufficiency:
 - A. Results in sensory losses along well-defined dermatome patterns.
 - B. Occurs predictably after 1-2 hours of acute arterial occlusion.
 - C. Produces symptoms of burning and paresthetic pain, frequently worse with rest at night.
 - D. In *motor* nerve studies, causes decrease or absence of the compound muscle action potential.
 - E. In *sensory* nerve conduction studies, causes decrease or absence of conduction velocity, but sensory potential amplitude is normal.

11. Aortoenteric fistula (AEF) is *most commonly* due to:
- A. Intrinsic bowel disease in a segment of bowel adjacent to an aortic prosthesis.
 - B. Erosion of aortic prosthesis or an aortoprosthetic anastomoses into any hollow viscus that is not effectively separated from the aortic repair by a layer of healthy tissue.
 - C. Occult injury to the duodenum at the time of aneurysm repair.
 - D. Primary graft infection producing an abscess with subsequent erosion into the bowel.
 - E. Untreated abdominal aortic aneurysm that erodes into the overlying third portion of the duodenum.
12. Ischemia of peripheral nerves:
- A. Affects axoplasmic transport irreversibly after 6-8 hours.
 - B. Releases potassium into the extracellular space, causing irreversible depolarization of cell membranes.
 - C. Results in irreversible nerve injury before muscle injury, according to almost all investigators.
 - D. Produces pathologic changes that correlate well with the severity of chronic ischemia from vascular disease.
 - E. In general, affects myelinated nerve fibers more than nonmyelinated fibers, producing axonal degeneration, particularly in the center of nerves.
13. Which of the following is/are true?
- A. Sympathectomy is no longer part of the treatment of atheroembolism.
 - B. Lesions causing microemboli from the level of the adductor canal always require formal femoral-popliteal bypass.
 - C. Over half of the patients suffering their first atheroembolic event will respond to antiplatelet therapy.
 - D. In disseminated atheroembolism, the kidneys are affected but the intestine is spared.
 - E. None of the above.
14. In general, isolated lacerations of the inferior vena cava are best repaired by:
- A. Lateral venorrhaphy.
 - B. Resection and replacement with a spiral vein graft.
 - C. Resection and replacement with an autogenous vein graft.
 - D. Resection and replacement with a PTFE prosthetic graft.
 - E. Ligation.
15. Which of the following most accurately represents the 5-year *overall* primary patency rates for femoropopliteal reconstruction with autogenous vein and PTFE?
- | <i>Vein</i> | <i>PTFE</i> |
|-------------|-------------|
| A. 90% | 30% |
| B. 70% | 40% |
| C. 50% | 50% |
| D. 40% | 60% |
| E. 40% | 40% |

16. Which of the following statements about patency following percutaneous transluminal balloon angioplasty (PTA) is/are true:
- A. External iliac PTA has a significantly better patency than superficial femoral artery (SFA) PTA.
 - B. Aortic stenoses don't respond to PTA as well as iliac lesions in terms of patency.
 - C. The length of the lesion does not affect patency after femoropopliteal PTA until 10 cm is exceeded.
 - D. For SFA lesions, PTA has equivalent patency to operative bypass.
 - E. Stenting improves the patency of PTA when applied to SFA lesions
 - F. None of the above.
17. The predictable physiologic effects of sympathectomy include:
- A. A permanent increase in resting and postexercise muscle blood flow.
 - B. Increased flow to the distal cutaneous beds.
 - C. Accelerated and enhanced collateral flow development.
 - D. Increased sweating.
 - E. Diminished pain perception.
18. Angiographic findings most consistent with popliteal entrapment are:
- A. A nonstressed view showing an "hourglass" deformity of the midpopliteal artery.
 - B. A sharp cutoff ("meniscus sign") in the distal below-knee popliteal artery.
 - C. Occlusion of the midpopliteal artery seen only during active plantar flexion against resistance.
 - D. An ulcerative stenosis in the midpopliteal artery.
 - E. Medical displacement of the popliteal artery.
19. The following statement(s) regarding the neuroanatomy of the lumbar sympathetics is/are true:
- A. Preganglionic fibers do *not* normally pass to or through lumbar ganglia below L3.
 - B. Postganglionic outflow occurs as high as T₁₀.
 - C. The two most important ganglia to remove are L₂ and L₃.
 - D. L₃ is the most inconsistent ganglion, being absent in almost one half of patients.
 - E. Bilateral lumbar sympathectomy causes impotence in most young males.
20. Calf claudication in a young athlete suggests a diagnosis of:
- A. Popliteal artery entrapment.
 - B. Popliteal adventitial cystic disease.
 - C. Popliteal fibromuscular hyperplasia.
 - D. Popliteal aneurysm.
 - E. All of the above.
21. Common carotid artery occlusive lesions are:
- A. Encountered three times more frequently than carotid bifurcation lesions.
 - B. Usually treated with subclavian-carotid artery bypass grafting.
 - C. Never symptomatic.
 - D. Usually treated with retrograde endarterectomy performed through cervical incisions.
 - E. Most commonly caused by Takayasu's diseases.

22. Arterial complications of thoracic outlet compression:
- A. Occur in approximately 15% of cases.
 - B. Present long after symptoms appear.
 - C. Occur more frequently from *incomplete* than from *complete* cervical ribs.
 - D. Can result from “whiplash” cervical injuries.
 - E. Are *not* caused by congenital abnormalities of the first thoracic rib.
23. The most common site of injury to the artery in a patient with hypothenar hammer syndrome is:
- A. Brachial artery.
 - B. Radial artery.
 - C. Ulnar artery at the wrist.
 - D. Terminal branch of the ulnar artery.
 - E. Deep arch of the hand.
24. The component of a vascular anastomosis most important in preventing pseudoaneurysm formation is/are:
- A. Mesenchymal tissue ingrowth.
 - B. Length of arteriotomy.
 - C. Type of arterial conduit utilized.
 - D. Type of suture material utilized.
 - E. “Purchase” of vessel wall.
25. Which of the following statements regarding cervical ribs is *false*?
- A. Cervical ribs are bilateral in over 50% of affected individuals.
 - B. Arterial complications most frequently affect the right upper extremity.
 - C. Most cervical ribs do not require intervention.
 - D. Cervical ribs are equally prevalent among males and females.
 - E. Aneurysms associated with cervical ribs are due to compression and poststenotic dilation of the distal subclavian artery.
26. Which of the following statements regarding the pathogenesis of anastomotic pseudoaneurysm is/are *false*?
- A. Short end-to-side anastomoses may result in localized dilation and increased congenial pressure according to LaPlace’s law.
 - B. Because most graft materials are less compliant than native arteries, there is preferential dilation of the artery, inducing disruptive stress on the anastomosis.
 - C. The most common organisms cultured from infected pseudoaneurysms are *Staphylococcus epidermidis* or other coagulase-negative staph species.
 - D. Micro-occlusive disease of the vasa vasorum is involved in the fibrous degeneration of host vessels proximal to the anastomosis.
 - E. End-to-side anastomoses are more prone to pseudoaneurysms than end-to-end anastomoses.
27. The characteristic features of Klippel-Trenaunay syndrome include:
- A. Extensive arteriovenous fistulas.
 - B. Anomalous venous drainage of the lower extremity.
 - C. Bilateral leg involvement.
 - D. Poor response to surgical treatment in most cases.
 - E. Spontaneous resolution in late childhood.

28. A longstanding radiocephalic angioaccess fistula in a patient with mild hand ischemia will show which of the following findings on noninvasive testing?
- A. Decreased flow velocity in the ulnar artery.
 - B. Reduced antegrade flow in the distal radial artery.
 - C. Improved digital pressure with compression of the distal radial artery.
 - D. Increased digital plethysmographic excursions when the brachial artery proximal to the fistula is compressed.
 - E. Improved digital pressures and plethysmography by compression of the cephalic vein.
29. The most common long-term complication of permanent venous access devices is:
- A. Infection.
 - B. Vessel thrombosis.
 - C. Catheter occlusion or malfunction.
 - D. Dislodgement or catheter migration.
 - E. Vascular trauma or injury.
30. Balloon angioplasty is *least* successful in the treatment of:
- A. Focal atherosclerotic stenosis of the main renal artery.
 - B. Fibromuscular hyperplasia of the main renal artery.
 - C. Atherosclerotic lesions involving the renal artery ostium.
 - D. Anastomotic stenosis following renal transplantation.
 - E. Fibromuscular hyperplasia in a renal artery branch.