Post-Test Questions

Article One (pp. 225–233)

- For standard catheterization of the intracranial posterior circulation, what combination of the factors below should be used?
 - Right vertebral artery catheterization, 6 mL/s for 9 mL, 5F Davis catheter
 - Left vertebral artery catheterization, 6 mL/s for 9 mL, 5F Davis catheter
 - Left subclavian artery catheterization with the occlusive blood pressure cuff inflated on the left arm, 8 mL/s for 15 mL, 5F Davis catheter
 - Bilateral vertebral artery catheterization, 6 mL/s for 9 mL, and 5F Davis catheter
- Which imaging projection best profiles the middle cerebral artery bifurcation or trifurcation?
 - Townes view
 - Lateral view
 - Oblique view
 - Submental vertex view
 - Stenvers view
- What are the Society of Interventional Radiology recommended thresholds for reversible and permanent neurological deficits?
 - 3% reversible and 1.5% permanent neurological deficits
 - 2.5% reversible and 1.5% permanent neurological deficits
 - 2.5% reversible and 1% permanent neurological deficits
 - 2% reversible and 0.5% permanent neurological deficits
 - 1% reversible and 0.5% permanent neurological deficits

Article Two (pp. 234–239)

- The presence of angiographically occult connections between the external and internal carotid arteries are:
 - Dangerous routes for nontarget embolization of the brain in the setting of epistaxis intervention
 - A source of collateral blood supply to the central nervous system in the event of internal carotid artery occlusion
 - Of no clinical importance because they are too small to see
 - None of the above
 - Both A and B

- The percentage of patients with a complete Circle of Willis is closest to:
 - 100%
 - 50%
 - 75%
 - 25%
- The artery of Adamkiewicz:
 - Is the only artery to supply the spinal cord
 - Is 1 of 23 paired arteries supplying the spinal cord
 - Supplies the majority of blood to the anterior surface of the lower two-thirds of the spinal cord
 - Always arises from the left

Article Three (pp. 240–244)

- The Hunt and Hess scale for subarachnoid hemorrhage:
 - Is used to quantify the amount of blood present on the baseline head computed tomogram.
 - Estimates the surgical risk of aneurysm repair.
 - Is corrected for patient age.
 - Does not correlate with prognosis.
- Abnormalities of cranial nerve three can present as any of these findings *except*:
 - Dilated pupil
 - Hemianopsia
 - Lateral deviation of the eye
 - Non-reactive pupil
- Cerebral aneurysms are most often found
 - Incidentally
 - In patients with headache and subarachnoid hemorrhage
 - In patients with headache but without subarachnoid hemorrhage
 - In patients with third nerve palsy

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Article Four (pp. 245-248)

10. All of the following are risk factors for carotid blowout syndrome *except*:
 - A. Radiation treatment
 - B. Recent percutaneous biopsy
 - C. Radical neck surgery
 - D. Mucocutaneous fistula
11. Carotid blowout syndrome is classified as *impending* when:
 - A. There is imaging evidence of tumor invasion of the carotid
 - B. The carotid artery is visualized in an ulcer cavity
 - C. There is active bleeding
 - D. Prior episode of bleeding controlled by conservative management
12. All of the following have been seen after stent placement for carotid blowout syndrome *except*:
 - A. Migration of the stent into the aorta
 - B. Stent occlusion
 - C. Brain abscess
 - D. Delayed stroke

Article Five (pp. 249-262)

13. Which arteries are most directly involved in intractable posterior epistaxis?
 - A. Sphenopalatine artery, infraorbital artery, posterior superior alveolar artery, and anterior deep temporal artery
 - B. Sphenopalatine artery, ascending palatine artery, and posterior ethmoid artery
 - C. Infraorbital artery, dorsal nasal artery, and lateral nasal artery
 - D. Sphenopalatine artery, descending palatine artery, and anterior and posterior ethmoid arteries
 - E. Sphenopalatine artery, ascending palatine artery, and anterior and posterior ethmoid arteries
14. Which statement best describes the various embolic agents that have been described in the literature to treat intractable posterior epistaxis?
 - A. The majority of studies have implemented Gelfoam powder or very small sized (50–150 μm) polyvinyl alcohol (PVA) particles to treat epistaxis
 - B. Due to concerns for distal nontarget embolization, the majority of the current literature suggests that coil embolization should be performed in cases of epistaxis

- C. The majority of studies have implemented Gelfoam (1–2 mm) or small-medium sized PVA (150–500 μm) particles to treat epistaxis.
 - D. Although both Gelfoam and PVA have been described in multiple reports, there is newer evidence that suggests cyanoacrylate may be a better embolic agent for epistaxis
 - E. The majority of studies have used Gelfoam (1–2 mm) or medium sized PVA (500–700 μm) particles to treat epistaxis
15. Which statement regarding the facial artery embolization is most accurate?
 - A. Facial artery embolization is associated with major complications in most cases and should only be considered for cases of failed internal maxillary artery (IMAX) embolization
 - B. Facial artery embolization is associated with minor complications in most cases, and has been associated with increased success in controlling epistaxis in some studies
 - C. Facial artery embolization should be considered as a first step in cases where IMAX arteriography fails to show an abnormality
 - D. Facial artery embolization may require the use of a more different embolic agent than that used in the IMAX embolization. In most cases, this agent will be smaller than that used in the IMAX.
 - E. Facial artery embolization, if performed, should be done bilaterally in all cases due to the extensive collaterals from the opposite side

Article Six (pp. 263-277)

16. Select the statement regarding embolization of meningioma that is most reflective of the literature available:
 - A. Preoperative arteriography and embolization can be performed without risk to the patient if the operator has sufficient skill and expertise
 - B. Preoperative embolization of meningioma has become the standard at all large centers in the United States
 - C. Preoperative embolization, even when practiced by skilled practitioners, will always carry a small risk of significant neurological complication
 - D. Preoperative embolization, when performed well, can serve as a stand-alone therapy for many patients
 - E. Preoperative embolization, to be effective, must include elimination of all blood supply to the tumor, including both the external and the internal carotid supply

17. Which of the following statements regarding complications associated with meningioma embolization is most accurate?
 - A. Cranial nerve palsies should not occur if one embolizes with particles greater than 50 μm as the vessels of the vasa nervorum are smaller than 50 μm
 - B. Hemorrhage into meningioma following embolization appears to be more common in meningioma with exclusive external carotid artery supply
 - C. The use of calibrated microspheres for preoperative meningioma embolization has been shown to eliminate complications with similar efficacy when compared with PVA particulate embolization
 - D. The use of smaller particles (50–150 μm) has been associated with reduced intraoperative bleeding albeit at a cost of higher complications
 - E. The use of smaller particles (50–150 μm) has become the standard due to their proven superiority in controlled trials
18. **True or false:** Which of the following statements regarding meningeal blood supply is TRUE?
 - A. Parafalcine meningiomas, depending on their location, are often supplied by the ipsilateral middle meningeal artery, contralateral meningeal artery, and/or recurrent meningeal artery
 - B. Posterior fossa meningiomas will often be supplied by the posterior meningeal artery. This artery commonly arises from the occipital artery, but may also arise from the vertebral artery or ascending pharyngeal artery
 - C. The middle meningeal artery may have anastomoses to the ophthalmic artery through the recurrent meningeal artery, lacrimal artery, or via the anterior falcine artery
 - D. The ascending pharyngeal artery is an external carotid artery branch and thus can generally be embolized with impunity when it supplies meningioma
 - E. The inferolateral trunk contributes several branches. These include the marginal tentorial artery (aka Bernasconi and Cassinari), the dorsal meningeal artery, and the inferior hypophyseal artery
20. On average, preoperative embolization of vertebral body metastases decreases intraoperative blood loss by:
 - A. 5 to 10%
 - B. 20 to 30%
 - C. 50 to 75%
 - D. 95 to 100%
21. All of the following are complications associated with transcatheter embolization of vertebral body metastases *except*:
 - A. Contrast reaction
 - B. Femoral artery pseudoaneurysm
 - C. Spinal cord infarct
 - D. Dural AV fistula creation

Article Eight (pp. 282–287)

22. Assuming that there are no contraindications to treatment, the current standard of care of ischemic stroke patients within 4.5 hours of symptom onset is:
 - A. IA thrombolysis
 - B. IA thrombectomy
 - C. IV thrombolysis
 - D. Watchful waiting
23. IA treatment of ischemic stroke:
 - A. Has been shown in prospective trials to be better than IV thrombolysis
 - B. Is available at most community hospitals
 - C. Can provide reperfusion rates in excess of 50%
 - D. Results in > 50% of treated patients experiencing a good neurological outcome at 90 days
24. Treatment of posterior circulation ischemic stroke:
 - A. Uses the same temporal guidelines as strokes in the anterior circulation
 - B. Is not as important because the posterior circulation does not supply language centers of the brain
 - C. Should be considered even beyond the standard 8 hours window for IA therapy because the clinical outcome of untreated posterior circulation stroke is so poor
 - D. Has a much higher success rate than anterior stroke

Article Seven (pp. 278–281)

19. The goal of preoperative embolization of vertebral body metastases is:
 - A. Definitive treatment of the tumor
 - B. To provide improved hemostasis during operative resection
 - C. Routinely achieved by transcatheter embolization alone
 - D. To assess whether or not the target level shares its blood supply with the spinal cord

Article Nine (pp. 288–296)

25. Which of the following is the best candidate for carotid stent?
 - A. 65-year-old man with 75% symptomatic carotid stenosis and Type I arch
 - B. 80-year-old woman with 75% symptomatic carotid stenosis and Type III arch
 - C. 80-year-old man with 50% asymptomatic carotid stenosis and Type II arch
 - D. 68-year-old woman with 82% asymptomatic carotid stenosis and Type II arch

26. Which of the following is the most correct statement regarding antiplatelet and anticoagulation therapy in the periprocedural period for carotid artery stenting (CAS)?
- Clopidogrel 75 mg/day initiated post-CAS for 30 to 45 days then aspirin indefinitely, intravenous heparin with activated clotting time (ACT) target of 250 to 300 seconds
 - Clopidogrel 75 mg/day initiated 5 days prior to CAS and then continued for 30 to 45 days then aspirin indefinitely, intravenous heparin 5,000 U, no ACT check
 - Clopidogrel 75 mg initiated 5 days prior to CAS and continued for 30 to 45 days then aspirin indefinitely; intravenous heparin with ACT target 250 to 300 seconds.
 - Clopidogrel 300 mg 5 hours prior to CAS and 75 mg/day for 30 to 45 days then aspirin indefinitely; intravenous heparin 5,000 U, no ACT check
27. Which of the following is the most correct answer
- Medicare coverage extends to normal-risk symptomatic patient with 80% carotid stenosis
 - Medicare coverage extends to symptomatic patient with 80% recurrent carotid stenosis after carotid endarterectomy
 - Medicare coverage extends to high-risk symptomatic patient with 60% carotid stenosis, not in a trial
 - Medicare coverage extends to normal-risk asymptomatic patient with 75% carotid stenosis
29. Which imaging exam is most preferred prior to vertebroplasty?
- Plain films of the spine
 - Computed tomography
 - Magnetic resonance imaging
 - Nuclear medicine bone scan
30. When advancing a vertebroplasty needle via a “down the barrel” transpedicular approach, care must be taken to avoid violating the:
- Superior and medial walls of the pedicle
 - Inferior and medial walls of the pedicle
 - Superior and lateral walls of the pedicle
 - Superior and inferior walls of the pedicle

Article Eleven (pp. 307–317)

Article Ten (pp. 297–306)

28. Which of the following is an indication for vertebroplasty?
- Asymptomatic vertebral compression fracture
 - Prophylactically VP in osteoporotic vertebral body
 - Symptomatic vertebral compression fracture that has failed to respond to medical therapy
 - Vertebral compression fracture in a patient with active urinary tract infection
31. What is the most appropriate initial percutaneous intervention for a patient with refractory centralized low back pain that has failed medical management?
- Transforaminal approach to epidural steroid injection (ESI)
 - Interlaminar approach to ESI
 - Medial branch blockade of the spinal nerves
 - Sacroiliac joint injection
32. To appropriately perform an anesthetic block of the L5/S1 facet joint, which ipsilateral neural structure(s) should be targeted?
- Medial branch of the L4 spinal nerve
 - Dorsal ramus of the L5 spinal nerve
 - Medial branch of the L4 spinal nerve and dorsal ramus of the L5 spinal nerve
33. In what anatomic location is the medial branch of L1–L4 spinal nerves targeted for anesthetic blockade?
- At the inferior aspect of the ipsilateral facet joint capsule
 - At the junction of the ipsilateral transverse process and superior articular process of the facet joint
 - At the superior aspect of the ipsilateral foramen in the oblique view
 - At the midportion of the transverse process