

TUMOR AND INFECTION EXAMINATION  
FEBRUARY 2008

Name \_\_\_\_\_ Date \_\_\_\_\_

FOR ALL QUESTIONS PICK THE ONE BEST ANSWER.

1. Normal uptake of Ga-67 may be seen in the following organs:
  - a. Thymus, liver, spleen, breast
  - b. Tracheobronchial tree, liver, spleen
  - c. Myocardium, thymus, spleen
  - d. Breast, kidney, bone, myocardium
  - e. Spleen, kidney, adrenal medulla
  
2. Normal uptake of Tl-201 is seen in:
  - a. Adrenal cortex
  - b. lacrimal glands
  - c. gallbladder
  - d. bowel
  
3. Concerning F-18 FDG:
  - a. FDG is a glucose analog and is phosphorylated intracellularly by dextrokinase to FDG-6-phosphate
  - b. Higher histologic grade tumors usually show lower F-18 FDG uptake.
  - c. the bladder receives the highest radiation dose, about 4 rads/10 mCi
  - d. the brain receives the highest radiation dose, about 5 rads/10 mCi
  
4. Regarding imaging with In-111 Octreoscan:
  - a. The sensitivity for detecting insulinomas is generally very high, >90%
  - b. the sensitivity for detecting medullary carcinoma of the thyroid is generally very high, >90%
  - c. somatostatin receptors are found on lung cancer cells and malignant lymphoma cells
  - d. In-111 Octreoscan is very slowly cleared by the kidneys and by 24 hours after injection 55% of the dose is still in circulation
  
5. Regarding In-111 ProstaScint imaging:
  - a. The usual dose is 10 mCi In-111 ProstaScint intravenously
  - b. In-111 Prostascint is slowly cleared and has a biological half-life of 24 hours
  - c. The radiopharmaceutical is a murine Fab' antibody fragment linked via a chelator with In-111
  - d. Adverse reactions occur in 4% patients receiving ProstaScint

6. Regarding tumor PET imaging:
  - a. Melanomas usually show avid uptake of F-18 FDG
  - b. In the early post-radiotherapy assessment of primary malignant brain tumors, increased uptake of FDG nearly always indicates residual disease
  - c. The formula for standardized uptake value (SUV) = Mean ROI activity/Body weight
  - d. F-18 FDG has similar accuracy to CT in the preoperative staging of non-small cell lung cancer
  
7. Regarding the use of the labeled leukocytes for infection:
  - a. In-111 oxine is lipid soluble and readily diffuses through cell membranes
  - b. In-111 oxine preferentially labels granulocytes
  - c. With Tc-99m HMPAO labeling, the highest radiation dose is to the spleen
  - d. In-111 labeled leukocytes are preferred over Tc-99m HMPAO-wbc in pediatric patients because the radiation dosimetry of In-111 wbc is more favorable.
  
8. Which of the following is a well-recognized cause of false-positive labeled white blood cell scans:
  - a. Bone island
  - b. Soft tissue tumor
  - c. Reflex sympathetic dystrophy
  - d. Uninfected surgical wound one year post-surgery
  - e. Normal choroid plexus
  
9. Regarding the use of the bone scan for infection:
  - a. Infection and loosening of a hip prosthesis will both show increased vascularity AND delayed uptake
  - b. b. Increased activity surrounding a knee prosthesis one year after surgery nearly always signifies infection or loosening
  - c. Cellulitis in an extremity does not cause increased uptake in the neighboring bone on delayed imaging
  - d. Bone scans are less sensitive in detecting osteomyelitis in neonates because the foci of uptake are so small
  
10. Concerning infection imaging:
  - a. The principal mechanism for polyclonal IgG antibody localization in infection is immunological
  - b. Vertebral osteomyelitis is a described cause of a false negative scan
  - c. Uptake of 111-In WBC in most of the nasal sinuses is normal
  - d. Early lung uptake of 111 In WBC is highly specific for infection