

Questions

1. Mantle Cell Lymphoma is associated with which of the following:
 - A. t(11;14)
 - B. t(8;14)
 - C. t(2;5)
 - D. t(11;18)
 - E. t(14;18)
2. A case of anaplastic large cell lymphoma (ALCL) with t(1;2) is stained with ALK. Which of the following will be the most likely histologic staining pattern:
 - A. Nuclear and cytoplasmic
 - B. Granular cytoplasmic
 - C. Cytoplasmic and Membranous
 - D. Membranous only
3. A patient is found to have a renal tumor with the histology represented in the image for this question. This tumor would be best classified as which of the following:
 - A. Oncocytoma
 - B. Chromophobe renal cell carcinoma
 - C. Eosinophilic variant of clear cell renal cell carcinoma
 - D. Medullary carcinoma
 - E. Urothelial carcinoma
4. A renal tumor with the electron microscopy findings of 150-300 nm clear vesicles would most specifically stain for which of the following:
 - A. PAS with diastase
 - B. PAS without diastase
 - C. Hale's colloidal iron
 - D. Renal cell carcinoma marker
5. A renal tumor has predominantly clear cells with the highest grade area containing cells with irregular nuclear border (size ~20µm) and nucleoli visible from 10X. Combining those findings with the image for this question from another area from the same tumor, the best Fuhrman grade is:
 - A. Fuhrman grade I
 - B. Fuhrman grade II
 - C. Fuhrman grade III
 - D. Fuhrman grade IV
 - E. Fuhrman grade V
6. Which of the following is the maximum amount of whole blood that can be collected from a donor:
 - A. 9.5 mL/kg
 - B. 10.5 mL/kg
 - C. 11.5 mL/kg
 - D. 12.5 mL/kg
 - E. None of the above

7. Blood can be transfused with which of the following:
- A. Normal saline (0.9%)
 - B. Lactated ringers
 - C. 5% albumin
 - D. Both A and C are correct
 - E. All of the above are correct
8. All of the following characteristics are helpful in differentiating a Spitz nevus from melanoma EXCEPT:
- A. Sharp circumscription
 - B. Clefts around melanocytic nests
 - C. Mitoses below the dermal epidermal junction
 - D. Patient age
 - E. None of the above
9. A biopsy from the hand of a 30 y/o male shows a loosely arranged spindle cell proliferation admixed with chronic inflammatory cells. The arrangement is slightly storiform with stromal mucin (focal microcysts). Numerous normal mitoses are present. This is most consistent with which of the following diagnoses?
- A. Inflammatory myofibroblastic tumor
 - B. Superficial fibromatosis
 - C. Dermatofibrosarcoma protuberans
 - D. Nodular fasciitis
 - E. Solitary fibrous tumor
10. Carney's complex is characterized by all of the following EXCEPT:
- A. Cardiac myxoma
 - B. Mucocutaneous pigmentation
 - C. Pulmonary chondroma
 - D. Endocrinopathies
 - E. Schwannoma
11. A deficiency in which of the following will cause an elongation of the aPTT, but will not result in patient bleeding, clinically.
- A. Factor XII
 - B. Factor IX
 - C. Factor VIII
 - D. Factor X
 - E. None of the above
12. All of the following cause aggregation of platelets EXCEPT:
- A. ADP
 - B. Collagen
 - C. Ristocetin
 - D. Epinephrine
 - E. Thromboxane A2

13. In a w/u for Von Willebrand's disease, a patient was found to have absence of large vWF multimers, and hypersensitivity to ristocetin (in vitro). This is most characteristic of which type of Von Willebrand's disease:
- A. Type I
 - B. Type IIa
 - C. Type IIb
 - D. Type IIIM
 - E. Type III
14. The findings in the image for this question from a respiratory specimen best represents which of the following:
- A. Charcot-Leyden crystals
 - B. Corpus amylaceum
 - C. Psammoma Body
 - D. Pollen
 - E. Furruginous body
15. The findings in the image for this question from a bronchial wash specimen best represents which of the following:
- A. Small cell carcinoma
 - B. Creola body
 - C. Adenocarcinoma
 - D. Squamous cell carcinoma
 - E. Parakeratosis
16. The image for this question comes from a 49 y/o male with a long history of smoking who underwent a transbronchial FNA. The clusters of cells from these slides best represent which of the following:
- A. Benign bronchial epithelial cells
 - B. Squamous cell carcinoma
 - C. Adenocarcinoma
 - D. Small cell carcinoma
 - E. None of the above
17. The image for this question best represents which of the following:
- A. Renal cell carcinoma
 - B. Pheochromocytoma
 - C. Adrenal cortical carcinoma
 - D. Adrenal adenoma
 - E. Gastrointestinal stroma tumor (GIST)

Answers

1. Answer: A. Mantle cell lymphoma is associated with translocation of the cyclin D1 (bcl-1) located on ch. 11q13 with the heavy chain immunoglobulin gene located on ch. 14q32. Other translocation associations to remember:
t(14;18) – bcl2-IgH → Follicular lymphoma
t(2;5) – ALK-NPM → Anaplastic Large Cell Lymphoma
t(11;18) – API2-MLT → Extranodal marginal zone lymphoma
t(8;14) – c-myc-IgH → Burkitt lymphoma
2. Answer: C. t(2;5) → nuclear and cytoplasmic, t(1;2) → membranous and cytoplasmic, and t(2;17) → granular cytoplasmic. The other translocations do not have a specific pattern. *Test taking strategy.* The t(2;5) with nuclear and cytoplasmic staining is a popular focus of this entity from an ALK staining standpoint. (*Tumors of Haematopoietic and Lymphoid Tissues.* Jaffe, ES, et al. World Health Organization Classification of Tumours. 2001. p234)
3. Answer: B. This is the oncocytoma-like variant of chromophobe renal cell carcinoma. The distinctive finding in this case to differentiate oncocytoma from chromophobe is the perinuclear halos. (*Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004.)
4. Answer: C. This represents a chromophobe renal cell carcinoma. 150-300 nm clear vesicles in a renal mass is characteristic of the chromophobe type of RCC. Hale's colloidal iron is specific for chromophobe RCC among renal tumors. *Test taking strategy.* PAS in this series of answers are a diversion. Many tumors with clear cells often have characteristic staining patterns with PAS, but this is not helpful in renal tumors. Renal Cell Carcinoma marker stains clear cell type of RCC, which does not have 150-300 nm clear vesicles characteristically. (*Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004.)
5. Answer: D. The initial description is c/w Fuhrman grade III, but eccentrically placed nuclei with eosinophilic cytoplasm is characteristic of rhabdoid features. In addition to pleomorphic tumors (worse looking than Fuhrman grade III), tumors with sarcomatoid or rhabdoid features are classified as Fuhrman grade IV. There is no Fuhrman grade V. (*Tumors of the Kidney, Bladder, and Related Urinary Structures.* Murphy, W., et al. AFIP Tumor Fascicle Series #1. 2004.)
6. Answer: B. According to the 2004 AABB Transfusion standards, the maximum amount of whole blood you can collect from a donor is 10.5 mL/kg. *Test taking strategy.* 12.5 g/dL is the minimum hemoglobin concentration for donation (38% Hct.).
7. Answer: D. Blood can be transfused with normal saline (0.9%), ABO compatible plasma, or 5% albumin. Lactated ringers is contraindicated because of the calcium content, which might overcome the anticoagulant in the blood. Other solutions (0.45% saline, TPN, etc.) are either hyotonic or hypertonic, which will damage or rupture the RBCs. ("Blood Bank," Chaffin, DJ. *The Osler Institute*, 2004)

8. Answer: C. Mitosis below the dermal epidermal junction can be found in Spitz nevi, which is another of the frustrating difficulties in differentiating these entities. (*Textbook of Dermatopathology*. Barnhill, RL., et al. 1998.)
9. Answer: D. This is a classic description of nodular fasciitis. DFSP has a storiform appearance with dense cellularity and a clear storiform pattern (CD34 + also). Solitary fibrous tumor (CD34 +) has dense amounts of collagen. IMT might sound like a good answer, but is associated with organ based pseudosarcomatous proliferation, not superficial soft tissue. (*Enzinger and Weiss's Soft Tissue Tumors*. Weiss, SW, et al., 4th Edition. 2001. p247-266)
10. Answer: C. Carney's complex is an autosomal dominant disorder characterized by myxomas (heart, skin, and breast), skin pigmentation (lentiginos and blue nevi), endocrine tumors (adrenal, testicular, thyroid, and pituitary), and peripheral nerve tumors (schwannomas). This is not to be confused with Carney's (syndrome) triad: gastrointestinal stromal tumors, paragangliomas, and pulmonary chondromas. *Test taking strategy*. They like to confuse you with this.
11. Answer: A. Factor XII is one of the contact factors (Hageman Factor). HMWK and kallikrein are also contact factors. Contact factors deficiency will not cause bleeding clinically.
12. Answer: C. Ristocetin activates platelets via the GpIb receptor vWF pathway (Adhesion). Intuitively, one would think collagen would do this since it binds to vWF and activates platelets, but this is not the case in *in vitro* testing.
13. Answer: Type IIb, which has a hyperfunctioning vWF. This results in formation of large multimers of vWF, which are rapidly cleared from the circulation (giving the absence on multimer testing – counter intuitive).
14. Answer: D. Pollen appears colorful with cell walls and spikes. Charcot-Leyden crystals are red, but tend to be bipyramidal or needle-shaped (particularly associated with asthma or other allergic conditions). They represent condensed granules from eosinophils. Corpus amyloaceum are concentrically laminated (associated with pulmonary edema). Furruginous bodies are formed when iron precipitates around an asbestos particle (although not exclusively). (*Practical Principles of Cytopathology*, DeMay, RM. 1999. pp. 31-34)
15. Answer: B. This cluster of cells represents hyperplastic bronchial cells, which can form 3-dimensional clusters resembling adenocarcinoma. The finding of cilia along the edge is the critical finding to alert one to the correct diagnosis. (*Practical Principles of Cytopathology*, DeMay, RM. 1999. p. 34.)
16. Answer: A. These cells are benign bronchial epithelial cells. Look at the periphery where one will find ciliated bronchoepithelial cells. The nuclei of these cells are similar to the rest of the cells in the cluster. Usually, we think of large 3-D clusters of cells as malignant, but this is not always the case. (*Practical Principles of Cytopathology*, DeMay, RM. 1999.)
17. Answer: B. This image represents a pheochromocytoma identified grossly by the dark brown changes induced by a reaction with potassium dichromate (15-20 minutes) of the left half of the image. Notice the thin rim of adrenal gland at the periphery.

Instructions:

Please review and answer the questions as if in a test taking format. The images for questions 3, 5, 14, 15, 16, and 17 can be found on the website www.PathMD.com under the SAMPLE ISSUE link on the left side of the page. These images will always be available for future review. After answering the questions, research and review the topics before looking at the answers and explanations. This will provide for maximal learning.

This SAMPLE ISSUE does not center on a single topic, and therefore differs slightly from what to expect each week's question set. Each week the *PathMD: Board Review Letter* will center on a single topic in either anatomic or clinical pathology. The answers with explanations will be made available later in the week. This will provide subscribers with time to research the correct answers. If errors are identified, please let us know so that corrections can be made (info@PathMD.com). We hope you find this resource helpful for your continued education.

Notes for SAMPLE question set:[†]

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