

# PathMD™: Board Review Letter

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Hematopathology - Part 1

Volume 1, Number 31

Case #1 A 45 y/o man presents with axillary adenopathy. A biopsy was performed and a representative image of the lymph node is shown. Immunohistochemistry showed the cells to be positive for EMA and CD30. CD20 and CD15 were negative. Based on these findings, the best answer is:

E. Anaplastic Large Cell Lymphoma

Answer: E. Anaplastic Large Cell Lymphoma (ALCL). ALCL is a T-cell lymphoma, which is CD30 positive. Most cases have cytotoxic granule-associated proteins. ALK (ALCL kinase) protein is positive in 60-85% of cases. Nuclear and cytoplasmic positivity of ALK in ALCL is c/w the t(2;5) *NPM-ALK* translocation. Most cases are also positive for EMA. (WHO, p. 230-234) T-cell markers (CD2-8) are insensitive individually, but will be positive in approximately 70% of cases when used as a panel. (J Vassallo, p. 225) Classical Hodgkin's Lymphoma is characteristically CD30 and CD15 positive and CD20 and CD45 negative, and Nodular Lymphocyte Predominant Hodgkin's Lymphoma (NLPHL) is CD20 and CD45 positive and CD15 and CD30 negative. Some people view NLPHL as a low grade diffuse large B-cell lymphoma with a better prognosis than as a Hodgkin's lymphoma.

Case #2 A biopsy of a lymph node from a 30 y/o shows multiple foci of pigment throughout the lymph node which is represented in the image for this case. Upon close examination under high power, it does not appear to be intracellular. The lymph node otherwise appeared reactive. What is the most likely etiology?

A. Formalin Pigment

Answer: A. Formalin Pigmentation. These occur not infrequently, most prominent in blood containing tissues. It is important not to confuse this with melanin. Iron can easily be differentiated with a Prussian blue iron stain. An important clue is the observation that the pigment is extracellular.

Case #3 A 13 y/o girl presents with cervical adenopathy. A lymph node biopsy was performed and representative images are shown. Based on the findings, the best answer is:

C. Cat-Scratch lymphadenitis

Answer: C. Cat-Scratch lymphadenitis. These images represent the classic findings of cat-scratch disease in the lymph node, which is characterized by geographic necrosis with neutrophils within the necrosis and peripheral palisaded epithelioid cells. (Iaochim, p. 115-119)

Case #4 The cell pictured from a blood smear best represents, which of the following:

B. Dyserythropoeisis

Answer: B. Dyserythropoeisis. This image illustrates budding of a nucleated red cell. This is one of the dysplastic features found within the erythroid series.

Case #5 The blood smear pictured from this case is from a 30 year old female with a history of travel to Africa 1 month ago and cyclic fevers every 48 hours. The RBCs pictured are normal in size. Based on the findings, the best diagnosis is:

D. *P. falciparum*

Answer: D. *P. falciparum*. *P. falciparum* often will have multiple smaller rings within normal sized RBCs. *P. ovale* and *P. vivax* are usually found in larger RBCs. *P. malariae* classically presents with a cyclic fever every 72 hours. *Babesia* ring forms may be very difficult to differentiate from *P. falciparum*, and a good clinical history may be helpful. (McPherson, p. 1127-34)

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Case #6 The image for this case is from a lymph node in a 21 y/o male with a known history of Hodgkin's lymphoma. With regard to the large cell of interest (pictured), all of the following are true EXCEPT:

- A. CD45 positive

Answer: A. Hodgkin's Lymphoma (HL) is characterized by Hodgkin cells (including Reed Sternberg cells) that are CD45 and CD20 (usually) negative, and CD30 and CD15 positive. CD15 positivity is often only present in a subset of CD30 positive Hodgkin cells. It has been recently proven that the Hodgkin cell is of B-cell origin.

Question #1 Which of the following stains would be most helpful in differentiating a reactive and neoplastic lymph node:

- B. Bcl-2

Answer: B. One of the most helpful markers in differentiating reactive germinal centers from neoplastic is bcl-2 staining. Bcl-2 will be positive in the germinal center in follicular lymphoma, which is the primary differential for a reactive lymph node. In a reactive node, the germinal center will be negative for bcl-2, and the surrounding mantle zone will be positive. *Test taking strategy.* Bcl-1 is cyclin D1, which is positive in mantle cell lymphoma. CD20 would be helpful in differentiating B and T-cells, but is not helpful in differentiating reactive and malignant follicular patterns.

Question #2 A lymph node is composed of large, expanded, irregularly shaped follicles (some of which form giant geographic structures). The interfollicular areas have plasma cells, histiocytes, and monocytoid B-cells. This description best describes which of the following entities:

- D. HIV-related

Answer: D. HIV lymphadenopathy is characterized by the description in the question. Syphilis has follicular hyperplasia with clusters of epithelioid histiocytes in addition to plasmacytic infiltrate and prominent vessels in the interfollicular areas. RA often has a prominent interfollicular plasmacytosis (Russell bodies) and the sinuses may contain neutrophils. Castleman's disease has two histologic subtypes: hyaline vascular and plasma cell.

Question #3 HHV-8 is associated with all of the following EXCEPT:

- B. Progressive transformation of germinal centers

Answer: B. HHV-8 is associated with multi-centric Castleman's disease, PEL, and Kaposi's sarcoma. *Test taking strategy.* Know these!

Question #4 Which of the following is not part of the WHO's classification of acute myeloid leukemia with recurring genetic abnormalities?

- C. t(9;22)

Answer: C. t(9;22) is associated with ALL, CML, and some AMLs, but is not part of the WHO's classification of AML with recurrent genetic abnormalities. It is important to remember that the t(8;21), inv(16), t(16;16), and t(15;17) are associated with a relatively good prognosis. AML with 11q23 abnormalities is associated with a poor prognosis. The author does not know of any good prognostic markers in hematopathology that is associated with chromosome 11. (WHO, p. 76-89)

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## Notes for question set:<sup>1</sup>

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