Welcome to the FIT Board Review Corner, prepared by Miriam Samstein, MD, PhD, and Timothy Chow, MD senior and junior representatives of the College’s Fellows-In-Training (FITs) to the Board of Regents. The FIT Board Review Corner is an opportunity to help hone your Board preparedness.

Review Questions

**Allergy and Immunology Review Corner:** Middleton’s Allergy Principles and Practice, 8th Edition
N. Franklin Adkinson Jr., MD, Bruce S Bochner, MD, A Wesley Burks, MD, William W Busse, MD, Stephen T Holgate, MD, DSc, FMedSci, Robert F Lemanske, Jr., MD and Robyn E O’Hehir, FRACP, PhD, FRCPath

**Chapter 62: Immunologic Nonasthmatic Diseases of the Lung**
Prepared by: Ekta Kakkar, MD

1. In granulomatosis with polyangiitis, which pattern of cytokine production is increased in response to environmental stimuli and contribute to granuloma formation?
   a. Th1 cytokines
   b. Th2 cytokines
   c. Th1 and Th2 cytokines
   d. Th1 and Th17 cytokines

2. Tissue biopsy of an affected organ in which condition would show absence of granuloma formation?
   a. Hypersensitivity pneumonitis
   b. Churg-Strauss syndrome
   c. Microscopic polyangiitis
   d. Histoplasmosis

3. A 50-year-old Caucasian male with vasculitis is diagnosed with mononeuritis multiplex. Which of the following is most likely to be true?
   a. He has asthma and a high eosinophil count.
   b. He has upper and lower airway involvement as well as glomerulonephritis.
   c. He has bilateral hilar lymphadenopathy.
   d. He will likely develop diffuse alveolar hemorrhage.

4. A 45-year-old female is diagnosed with granulomatosis with polyangiitis. She is found to have a positive ANCA. The ANCA can be used in this condition for what purpose?
   a. A positive ANCA is diagnostic for granulomatosis with polyangiitis.
   b. ANCA titers do not correlate well with the disease.
   c. ANCA titers can be used to evaluate disease severity.
   d. ANCA titers can be used to determine a relapse in disease.

5. Which of the following disorders is associated with an increased genetic predisposition?
   a. Goodpasture’s syndrome
   b. Microscopic polyangiitis
   c. Churg-Strauss syndrome
   d. Sarcoidosis
6. The following CXR is consistent with which stage of sarcoidosis?

   ![CXR Image]

   a. Stage 0  
   b. Stage I  
   c. Stage II  
   d. Stage III  
   e. Stage IV

7. In which of the following conditions is plasmapheresis a first-line therapy?
   a. Granulomatosis with polyangiitis  
   b. Serum sickness  
   c. Goodpasture’s syndrome  
   d. Myasthenia Gravis

8. A 45-year-old woman is found to have vasculitis, and her anti-proteinase 3 antibody is positive. Which of the following conditions does she most likely have?
   a. Churg-Strauss syndrome  
   b. Microscopic polyangiitis  
   c. Polyarteritis nodosa  
   d. Granulomatosis with polyangiitis

9. A 38-year-old African American woman is found to have bilateral hilar lymphadenopathy with parenchymal infiltrates on CXR. She is scheduled to have a bronchoscopy. What will be true about her biopsies and bronchoalveolar lavage (BAL)?
   a. Pathology will show caseating granulomas  
   b. BAL will show an elevated CD4 to CD8 ratio  
   c. BAL will show a decreased CD4 to CD8 ratio  
   d. BAL will show elevated neutrophils

10. What contributes to development of fibrosis in sarcoidosis?
    a. Shift from a Th1 response to a Th2 response  
    b. Shift from a Th2 response to a Th1 response  
    c. Downregulation of a Th1 response  
    d. Downregulation of a Th2 response
Answers:

1. **d.** Page 1015. Patients with granulomatosis with polyangiitis have an immune defect that leads to excessive production of Th1/Th17 cytokines (IL-17, TNF, and IFN-γ).

2. **c.** Page 1019. Absence of granulomatous inflammation in microscopic polyangiitis helps to differentiate it from other small vessel vasculitides discussed in this chapter.

3. **a.** Page 1020. Mononeuritis multiplex is the most common extrapulmonary manifestation of Churg-Strauss Syndrome which is characterized by asthma, allergic granulomatosis, and vasculitis. The characteristic laboratory finding in patients with Churg-Strauss Syndrome is peripheral eosinophilia.

4. **b.** Page 1015. ANCA antibody titers do not correlate well with disease activity, and patients in remission can continue to have a high ANCA titer.

5. **d.** Page 1021. There is an increased risk of sarcoidosis among first-degree relatives of patients with sarcoidosis. Siblings have a relative risk of 5.8 of having the disorder.

6. **b.** Page 1023. Stage 0 indicates no visible abnormalities. Stage I indicates bilateral hilar lymphadenopathy without parenchymal abnormalities. Stage II is bilateral hilar lymphadenopathy with pulmonary parenchymal abnormalities. Stage III is parenchymal infiltrates without hilar adenopathy, and Stage IV is pulmonary fibrosis.

7. **c.** Page 1028. Therapy for Goodpasture’s syndrome consists of prednisone, oral cyclophosphamide, and plasmapheresis daily for 14 days.

8. **d.** Page 1017. Antiproteinase-3 ANCA is positive in 75-90% of granulomatosis with polyangiitis patients. It is positive in 10-50% of patients with microscopic polyangiitis and <5% of patients with Churg-Strauss Syndrome.

9. **b.** Page 1022. This patient has sarcoidosis in which BAL shows increased lymphocytes and macrophages and an increased CD4/CD8 ratio. Pathology will show noncaseating granulomas.

10. **c.** Figure 62-4, page 1025. Release of TGF-β and CCL10 as well as downregulation of the Th1 response leads to fibrosis. In the initial phase of sarcoidosis, there is an increase in Th1 cytokine production and CD4+ T cell activation.