

Tropical and Travel Medicine: Review Questions

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QUESTIONS

Choose the single best answer for each question.

1. A 37-year-old man presents to the clinic with a 1-week history of intermittent high-grade fevers, malaise, and fatigue. The symptoms started about 2 weeks after he returned from a vacation at Martha's Vineyard. On examination, he appears pale and ill. His spleen is palpable at 2 cm below the costal margin. Results of laboratory studies reveal a leukocyte count of $7.5 \times 10^3/\mu\text{L}$, a hemoglobin level of 8 g/dL, a platelet count of $75 \times 10^3/\mu\text{L}$, and a low haptoglobin level. What is this patient's most likely diagnosis?

 - (A) Babesiosis
 - (B) Bartonellosis
 - (C) Lyme disease
 - (D) Malaria
 - (E) Viral illness
2. A 39-year-old soldier is referred to your clinic by his primary care physician for treatment of an ulcer that developed in Iraq 1 month ago on his right cheek. The ulcer is about 3 cm in diameter and is slightly pruritic but not painful. The ulcer has well-defined, raised borders and has a central bed of granulation tissue; it did not resolve with a course of cephalexin. A biopsy reveals amastigotes in tissue. What is the next course of treatment for this patient?

 - (A) Ciprofloxacin
 - (B) Linezolid
 - (C) Metronidazole
 - (D) Pentavalent antimony
 - (E) Vancomycin
3. A 72-year-old Indian man was recently diagnosed with glioblastoma multiforme. While being treated with high-dose dexamethasone, he develops abdominal pain, nausea, vomiting, and worsening shortness of breath. His respiratory symptoms rapidly worsen, leading to intubation. Chest radiograph reveals bilateral diffuse interstitial infiltrates. A bronchoalveolar lavage (BAL) is performed, and an urgent call from the laboratory states that worm larvae are seen in the BAL fluid. What is the most likely cause of this patient's symptoms?

 - (A) Ascariasis
 - (B) Dracunculiasis
 - (C) Hookworm
 - (D) Strongyloidiasis
 - (E) Tapeworm
4. All of the following statements regarding malaria are correct EXCEPT

 - (A) Quinidine and doxycycline are the treatment of first choice for falciparum malaria in adults in the United States
 - (B) Widespread quinine resistance is a significant problem in African countries
 - (C) *Plasmodium vivax* is associated with persistent liver stages that lead to relapse if not appropriately treated
 - (D) Chloroquine resistance among *P. falciparum* is now widespread in many countries
 - (E) Duffy antigen negativity is protective against *P. vivax*
5. A 33-year-old HIV-positive woman with a recent CD4 count of 350 cells/mm³ is admitted to the hospital with a 1-week history of progressively worsening shortness of breath, fever, and cough. On examination, the physician notes tender red nodules on her shins. The patient recently returned from a trip to Arizona, where her sister is building a new home. Chest radiograph reveals bilateral diffuse pulmonary infiltrates. What is this patient's most likely diagnosis?

 - (A) Blastomycosis
 - (B) Coccidioidomycosis
 - (C) Congestive heart failure
 - (D) Pneumococcal pneumonia
 - (E) *Pneumocystis jiroveci* pneumonia

(turn page for answers)

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ANSWERS AND EXPLANATIONS

- (A) Babesiosis.** The patient has babesiosis caused by *Babesia microti*, which is transmitted by a tick bite. Most cases occur in the coastal northeast United States. Patients usually present with fever and hemolysis and occasionally splenomegaly. The illness closely mimics malaria, but malaria is not endemic in the United States. Although Lyme disease is transmitted by the same vector, this patient's presentation is not compatible with Lyme disease (eg, erythema migrans; in later stages, fever and malaise associated with meningitis and heart block). Bartonellosis is caused by cat exposure and is not usually associated with hemolysis. This patient's splenomegaly, anemia due to hemolysis, and thrombocytopenia are not compatible with a viral illness.
- (D) Pentavalent antimony.** This patient has mucocutaneous leishmaniasis, a condition commonly seen in troops returning from the Middle East as well as patients from South America. The case patient's symptoms demonstrate the classic presentation of this disease. A punch biopsy identifies leishmania amastigotes in tissue and confirms the diagnosis. Small single lesions may resolve with watchful waiting, but multiple lesions and lesions on the face are usually treated with pentavalent antimonials. Amphotericin B may be an alternative agent that can be used in patients who cannot tolerate antimonials. None of the other antibiotic agents listed are effective against *Leishmania*.
- (D) Strongyloidiasis.** This patient has classic symptoms of *Strongyloides* hyperinfection, which is seen in patients from endemic countries with preexisting strongyloidiasis (eg, India, Africa, Southeast Asia, the Caribbean). When host immunity is impaired, especially by corticosteroid therapy, there is an accelerated generation of filariform larva leading to disseminated strongyloidiasis involving the gastrointestinal tract, lungs, central nervous system, and other organs. As the worms migrate from the gut, they are often accompanied by gram-negative rods from the gastrointestinal tract. Hence, these patients often present with gram-negative bacteremias, gram-negative meningitis, and pneumonias. This diagnosis must be considered in the appropriate clinical setting (ie, in patients who have traveled to endemic areas) and can be confirmed by visualizing larvae in wet mount preparations of sputum, cerebrospinal fluid, and blood. Ascariasis, dracunculiasis, hookworm, and tapeworm would not be found in BAL wet mounts.
- (B) Widespread quinine resistance is a significant problem in African countries.** Malaria is an overwhelming problem in developing countries, and chloroquine resistance is now widespread among *P. falciparum* in sub-Saharan Africa, Asia, and Latin America. Although decreased quinine sensitivity has been observed in some malaria parasites, the spread of quinine resistance across the world has been very slow and quinine still remains an effective drug in the treatment of severe infections. In the United States, the treatment of choice for falciparum malaria in adults is a combination of intravenous quinidine plus oral doxycycline. Persistent liver stages of *P. vivax* may cause relapse after the initial course of treatment but can be eradicated with primaquine. Duffy antigen is the erythrocyte receptor for *P. vivax* merozoite invasion. Duffy antigen negativity, which is very prevalent in West Africa, accounts for the low incidence of vivax malaria in this region.
- (B) Coccidioidomycosis.** The patient has pulmonary coccidioidomycosis. The history of recent travel to Arizona with exposure to a construction site is the key exposure history in this case. Most patients with coccidioidomycoses pneumonia have a self-limited course of illness; however, immunosuppressed patients (eg, patients with HIV) may have a fulminant course with respiratory failure. Some patients (commonly females) with coccidioidomycosis present with erythema multiforme or erythema nodosum. The triad of fevers, erythema nodosum, and arthralgias has been termed "desert rheumatism." The patient is less likely to have pneumococcal pneumonia given her exposure history and bilateral diffuse infiltrates on chest radiograph. She has no history of exposure to blastomycosis. Her recent CD4 count of 350 cells/mm³ makes *P. jirovecii* pneumonia less likely.

SUGGESTED READING

Mandell GL, Bennett JE, Dolin R, editors. Mandell, Douglas, and Bennett's principles and practice of infectious diseases. 6th ed. New York: Elsevier/Churchill Livingstone; 2005.

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