Blake's Illness: A Case of "Wild Life" Management

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Tuesday Afternoon

"Zach, can you take notes for me in our Wildlife Management class? I'm feeling awful so I'm heading back to the dorm. I really hate missing the first day of class though."

"I have to tell you, Blake, you look terrible. I hope whatever you have isn't contagious because I'm taking a lot of classes this semester and I can't afford to catch it."

Blake's summer had been a busy one, both scholastically and socially. He had thoroughly enjoyed his summer research project involving the tracking of Red-Tailed Hawks because it allowed him to spend a lot of time observing wildlife in the national parks surrounding Crider College. It was also the type of experience that would help him land a job with the park service after he graduated so that he could continue to work in a wildlife-related field. He had also experienced another type of "wild life" over the summer: camping trips involving sex, alcohol, drugs, bad eating habits, and lack of sleep.

The Next Day

By the next day, Blake's condition had gotten worse. He had a headache, low-grade fever, sore throat, and general malaise. Zach urged him to go to the student health center, but Blake thought that he could diagnose himself based on what he had learned in the anatomy and physiology classes he had taken, with a little help from the Internet. Besides, he felt so weak that the thought of trekking across campus to Herndon Hall Health Clinic did not sound appealing.

"My symptoms are so general," Blake discovered as he browsed the Internet. "Is this something I recently picked up or was it something I was exposed to late in the summer? I did have a few tick and mosquito bites. Could one of these vectors be the reason for my illness? I trapped and handled a variety of wildlife species this summer. Could I have picked up a pathogen from one of these animal reservoirs? I also had unprotected sex a couple of times, but I can't imagine that being a contributing factor because I knew my partners so well. Sometimes I ate food that wasn't thoroughly cooked on the campfire, but wouldn't I have had a bad bout of diarrhea?"

Blake decided to take some amoxicillin he still had from a time when he had a middle ear infection. He hadn't finished his prescription because he had started feeling better. The amoxicillin was past the expiration date, but it would be better than nothing, he thought. He read on an Internet site that amoxicillin was a narrow-spectrum antibiotic so he hoped that his condition would improve if what he had was a bacterial infection.

Your Task

Using the symptoms described above, make a list of 10 or more possible infectious diseases that might be plaguing Blake and explain why you have narrowed it down to these disorders.

Part II – A Visit to the Health Clinic

Blake's condition had worsened. Not only did he miss the first week of class, he had also developed a body rash, a higher fever, and his throat hurt even more. He was severely fatigued, but Zach helped him get to the student health clinic. Dr. Rosie Stamper, the attending physician, examined Blake. In a raspy voice, Blake explained some details that had led to his illness.

Here are Dr. Stamper's notes from Blake's physical exam:

- T 39.5° C; BP 128/68 mmHg; P 111/min; R28/min
- Pharyngeal erythema
- Symmetrical cervical lymphadenopathy
- Generalized rash on trunk
- Tonsillar exudates
- Abdominal tenderness
- No coughing or wheezing
- Inability to concentrate
- Loss of appetite
- Severe fatigue

Genitourinary:

- Not assessed

Results of the initial laboratory blood work:

- Hematocrit: 44%
- Platelets: 110,000 µL
- Leukocyte count: 13,200/µL
- Differential leukocytes: 9% PMNs, 26% monocytes, 55% lymphocytes; many (~10%) atypical cells

Differential diagnosis:

- Streptococcus (Group C or G)
- *Streptococcus pyogenes*
- *Neisseria gonorrhea*
- *Treponema pallidum*
- *Borrelia burgdorferi*
- *Rickettsia rickettsiae*
- Herpes simplex virus type I (HSV-1)
- Human immunodeficiency virus (HIV)
- Adenovirus
- Epstein-Barr virus (EBV)
- Cytomegalovirus (CMV)
- *Toxoplasma gondii*

Course of action:

- Admitted to Medon Mercy Hospital for further testing and observation.

Questions

1. Using data for normal blood values, compare Blake's differential blood test results. How, if at all, do Blake's values differ?
2. What diagnostic microbiological tests should be run to rule out potential pathogens?
3. Based on Blake's self-diagnosis, what problems exist with his use of amoxicillin, past or present?
4. Using the given tests and observations, what is your diagnosis?

Part III—Blake's Road to Recovery

Since throat cultures for the suspected bacterial pathogens were negative, Dr. Stamper did not prescribe antibiotics. An abdominal ultrasound revealed hepatosplenomegaly and a positive monospot confirmed the presence of the Epstein-Barr virus (EBV). EBV is a member of the herpesvirus family and the etiological agent of infectious mononucleosis.

After getting the results back, Dr. Stamper gave Blake a call. "Blake, we've gotten your lab results back and you have a confirmed case of infectious mononucleosis. The bad news is that there is no treatment for this viral disease, but it can be managed. I recommend that you get plenty of rest, eat well, and avoid any strenuous physical activity for the next four to five weeks. The good news is that you should gradually feel better within the next few weeks if you follow this advice. I would like you to call the office in about a week to let me know how you are progressing."

As Blake thought about the diseases that it could have been and the risks that he took over the summer, he felt fortunate that his illness wasn't typically life threatening. He was anxious to start feeling better again and vowed to heed Dr. Stamper's advice to prompt a speedy recovery. He also vowed to seek the appropriate medical care much more quickly the next time he felt so weak and to stop trying to diagnose his own disorders!

Questions

1. What is hepatosplenomegaly? What does it indicate and how is it useful for differentially diagnosing a patient with infectious mononucleosis?
2. What is a Monospot test? How does it work and why would it be useful for Blake's diagnosis?
3. What is the nature of the Epstein-Barr virus? Be able to explain the following:
    a. the viral properties of this pathogen;
    b. the epidemiology, pathogenesis, treatment, and preventative measures of this pathogenic disease; and
    c. the potential reactivation of the virus.
4. What is the rationale for suggesting a lack of strenuous physical activity to a patient with an EBV infection?
5. What innate and acquired protective mechanisms should have been elicited in response to Blake's viral infection?
6. Infectious mononucleosis is more common in developed countries than developing countries. How do you explain this?

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