DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

WEEK 2

ASSIGNMENTS, OBJECTIVES, AND CASE STUDY

TOPIC OF THE WEEK: REACTIONS TO TISSUE INJURY: EDEMA, THROMBOSIS, AND INFLAMMATION

REQUIRED READING:

Cotran, Kumar, Robbins: PATHOLOGIC BASIS OF DISEASE, 6th Edition,
- Acute and Chronic Inflammation (Chapter 3, pp. 50-87)
- Tissue Repair (Chapter 4, pp. 89-111)
- Hemodynamic Disorders, Thrombosis, and Shock (Chapter 5, pp. 113-137)

REOUIRED STUDY FOR SMALL GROUPS

CASE BASED STUDY Small Group Sessions

ASSIGNMENTS:
- Laboratory Medicine Case Book Chapters 14, 19 OR
- Laboratory Medicine Case Set CD ROM Chapters 19, 24
- CASE 1, (attached)

OBJECTIVES:
1. Case Book, Chapter 14, OR, Case Set, Chapter 19
   - Pathogenesis, clinical course, and treatment of deep venous thrombosis
   - Laboratory tests to evaluate hemostasis: Raskova, Shea, Skvara, and Mikhail: Laboratory
     Medicine Case Book, p.154; Ravel: Clinical Laboratory Medicine, pp. 86-91; 111
2. Case Book, Chapter 19, OR, Case Set, Chapter 24
   - Pathogenesis and clinical course of pseudomembranous colitis
   - Serum lactic dehydrogenase as a test: Ravel: Clinical Laboratory Medicine, pp. 332-334
   - Blood chemistry panel as a test (understanding of individual components)
   - Pathogenesis and causes of disseminated intravascular coagulation (DIC): Ravel: Clinical
     Laboratory Medicine, p. 102
   - Histopathological findings in pseudomembranous colitis and DIC
3. **Printed Case (Attached)**
- Pathogenesis of the underlying problem
- Erythrocyte sedimentation rate (ESR) as a test (understanding; interpretation; diagnostic use):
  Ravel: Clinical Laboratory Medicine, pp. 641-642

**PATHTALK Small Group Sessions**

**ASSIGNMENTS:**
- *Projection slides* on carousels in the Media Library, labeled by weekly topic and subject
- Slide Manual (pp. 14-19)
- Journal Club Article (see your Course Book)

**OBJECTIVES:**
- Correlations of histopathology, gross pathology, and laboratory findings
- Review of pathophysiology

**ADDITIONAL MATERIAL (Optional, unless indicated otherwise)**

- HANDOUT
- MATERIAL FOR SELF EVALUATION and VISUAL AND AUDIOVISUAL MATERIAL
See your Course Book (page 4) for a complete listing.
WEEK 2

DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

“PRINTED” CASE
A 10-year-old girl with body aches and chills

The patient's illness began suddenly on a flight home to New Jersey after spending 2 weeks at Lake Tahoe. It began with total body aches and non-shaking chills accompanied by fever and a transient "lacy" red rash on her arms and trunk. After 3 days the symptoms decreased but they reappeared 4 days later and again lasted about 3 days. Following another similar relatively symptom-free period, her symptoms recurred 4 days prior to admission. She denied camping in Nevada but dead mice were found in the home that her family was using on their vacation. A similar illness developed in the patient's father 5 days before the onset of symptoms in his daughter. The characteristics of his illness mimicked that of the girl except that he also developed a slight hearing loss.

Physical examination on admission showed an anxious child that was in no obvious distress. Oral temperature - 101.7°F; Pulse - 110 regular; B/P - 110/70; Respirations - 22. No skin rash was present, her throat and ears were clear of signs of inflammation and examination of her lung fields was unremarkable. Her heart rate was regular without murmurs. No significant lymphadenopathy was present but a nontender spleen tip was palpable 2 cm below the left costal margin.

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Patient</th>
<th>Test</th>
<th>Normal</th>
<th>Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hgb (g/dL)</td>
<td>12.0 - 15.0</td>
<td>13.1</td>
<td>AST (U/L)</td>
<td>0 - 55</td>
<td>20</td>
</tr>
<tr>
<td>Hct (%)</td>
<td>34 - 43</td>
<td>39.1</td>
<td>ALT (U/L)</td>
<td>0 - 50</td>
<td>12</td>
</tr>
<tr>
<td>WBC (thou/µL)</td>
<td>4.5 - 13.5</td>
<td>10.6</td>
<td>Alk Phos (U/L)</td>
<td>30 - 125</td>
<td>165</td>
</tr>
<tr>
<td>Polys (thou/µL)</td>
<td>1.8 - 7.0</td>
<td>8.26</td>
<td>Tot. Bilirubin (mg/dL)</td>
<td>0.3 - 1.2</td>
<td>0.89</td>
</tr>
<tr>
<td>Bands (thou/µL)</td>
<td>0 - 1.0</td>
<td>.12</td>
<td>BUN (mg/dL)</td>
<td>5 - 18</td>
<td>10</td>
</tr>
<tr>
<td>Lymphs (thou/µL)</td>
<td>1.5 - 6.5</td>
<td>.95</td>
<td>Creatinine (mg/dL)</td>
<td>0.3 - 0.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Monos (thou/µL)</td>
<td>0 - .8</td>
<td>1.2</td>
<td>Albumin (g/dL)</td>
<td>3.8 - 5.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Eos (thou/µL)</td>
<td>0 - .6</td>
<td>.12</td>
<td>Globulins (g/dL)</td>
<td>1.6 - 4.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Platelets (thou/µL)</td>
<td>150 - 400</td>
<td>226</td>
<td>ESR (mm/h)</td>
<td>0 - 13</td>
<td>51</td>
</tr>
</tbody>
</table>

Screen for *Borrelia burgdorferi* antibodies - Positive

Peripheral blood smear from patient - Wright/Giemsa stain x685.
Clinical Course: After a short period of observation in the hospital, the patient was discharged to await the results of additional laboratory tests. Subsequendy both the patient and her father were brought to the emergency room to begin antimicrobial therapy.

Each was given 100 mg. of doxycycline by mouth and observed. Within one hour of ingestion the 10-year-old girl twice vomited clear yellow fluid, had a sense of impending doom and developed an intense rigorous chill that lasted 90 minutes. During this time her temperature rose to 104.6°F orally, she showed signs of acral and circumoral cyanosis and became disoriented. She fully recovered and showed no adverse effects with the subsequent daily doses of doxycycline. No changes were observed in the father following the initiation of therapy.

Questions:

1. What is the significance of the erythrocyte sedimentation rate in this case?
2. What does the positive screen for Borrelia burgdorferi indicate?
3. What happened to the girl following the initiation of antimicrobial therapy?
4. What is the most likely diagnosis in this case?