TOPIC 1 OF THE WEEK: CELL AND TISSUE REACTION TO INJURY

REQUIRED READING:
Cotran, Kumar, Collins: Robbins’ PATHOLOGIC BASIS OF DISEASE, 6th Edition,
Cellular Pathology I: Injury and Cellular Death (Chapter 1, pp. 1-28)
Cellular Pathology II: Adaptions, Intracellular Accumulations, and Cell Aging
(Chapter 2, pp. 31-48)

TOPIC 2 OF THE WEEK: ENVIRONMENTAL PATHOLOGY

REQUIRED READING:
Cotran, Kumar, Collins: Robbins’ PATHOLOGIC BASIS OF DISEASE, 6th Edition,
Environmental Pathology (Chapter 10, pp. 403-436; Chapter 16, pp. 727-734)

REQUIRED STUDY FOR SMALL GROUPS

CASE BASED STUDY Small Group Sessions
ASSIGNMENTS:
- Laboratory Medicine Case Book Chapter 15 OR
- Laboratory Medicine Case Set CD ROM Chapter 20
- Printed Case 1 (attached)

OBJECTIVES:
1. Case Book, Chapter 15, OR, Case Set, Chapter 20
   - Pathogenesis, clinical course, and treatment of acute acetaminophen poisoning
   - Laboratory signs of organ damage in acute acetaminophen poisoning
   - Histopathology

2. Printed Case (Attached)
   - Pathogenesis of the diagnosed problems
   - Histopathology of the diagnosed problems
   - CBC as a test (understanding, interpretation, diagnostic use):
     Ravel: Clinical Laboratory Medicine, pp. 9-21
   - Laboratory tests to evaluate liver function:
     Ravel: Clinical Laboratory Medicine, pp. 309-318
   - Understanding problems raised by questions for homework and discussion
WEEK 1 - pg. 2

PATHTALK Small Group Sessions

ASSIGNMENTS:
- *Projection slides* on carousels in the Media Library, labeled by weekly topic and subject
- Slide Manual (pp.1-9, Cell Injury; pp.10-13, Environmental)
- 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)

- MATERIAL FOR SELF EVALUATION and VISUAL AND AUDIOVISUAL MATERIAL

See your Course Book (page 4) for a complete listing.
DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

“PRINTED” CASE
A 32-year-old man found unconscious at the scene of a fire

This 32-year-old white male was brought to the emergency room after having been found in a small storage building in an industrial park. Apparently, he had been drinking and smoking when a fire started in the building. Using available fire extinguishers containing carbon tetrachloride he succeeded in putting out the fire but was overcome by smoke and passed out. He was found unconscious several hours later by his coworkers. A half-empty bottle of whiskey and a trash basket containing partially burnt paper and rags were noted. One of his coworkers who accompanied the rescue squad to the hospital stated that he knew of no major illnesses in the patient but the patient was known to have a drinking problem.

Physical examination on admission revealed a semiconscious, well-developed, mildly obese white male. Oral temperature - 98.6°F; Pulse - 95; B/P - 110/65(supine); Respiration - 25. An odor of smoke and chemical fumes was noticeable, but there were no external burn injuries. Auscultation and percussion of the chest was unremarkable, the heart rate was regular without murmurs. The liver and spleen were not palpable and bowel sounds were active. Neurologically he was semiconscious but all reflexes were intact.

Selected Laboratory Data

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Admission</th>
<th>Day 2</th>
<th>Day 4</th>
<th>Day 6</th>
<th>Day 8</th>
</tr>
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<tbody>
<tr>
<td>Hgb (g/dL)</td>
<td>14.0 - 17.0</td>
<td>13.8</td>
<td>12.5</td>
<td>12.7</td>
<td>11.9</td>
<td>11.9</td>
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<tr>
<td>Hct (%)</td>
<td>40.0 - 49.0</td>
<td>42.0</td>
<td>35.2</td>
<td>34.5</td>
<td>31.8</td>
<td>30.7</td>
</tr>
<tr>
<td>WBC (thou/µL)</td>
<td>4.5 - 11.0</td>
<td>12.7</td>
<td>15.1</td>
<td>22.2</td>
<td>19.8</td>
<td>20.2</td>
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<tr>
<td>Plts (thou/µL)</td>
<td>130 - 400</td>
<td>275</td>
<td>251</td>
<td>163</td>
<td>100</td>
<td>97</td>
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<tr>
<td>PT (sec)</td>
<td>11 - 14</td>
<td>12</td>
<td>27</td>
<td>24</td>
<td>18</td>
<td></td>
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<tr>
<td>aPTT (sec)</td>
<td>21 - 31</td>
<td>24</td>
<td>28</td>
<td>26</td>
<td>26</td>
<td></td>
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<tr>
<td>BUN (mg/dL)</td>
<td>7 - 24</td>
<td>26</td>
<td>27</td>
<td>47</td>
<td>79</td>
<td>126</td>
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<tr>
<td>Creat. (mg/dL)</td>
<td>0.7 - 1.4</td>
<td>1.3</td>
<td>1.3</td>
<td>2.8</td>
<td>4.9</td>
<td>8.0</td>
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<tr>
<td>Tot. Bil. (mg/dL)</td>
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<td>9.1</td>
<td>13.8</td>
<td>12.5</td>
<td>6.2</td>
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<tr>
<td>Dir. Bil. (mg/dL)</td>
<td>0.02 - 0.18</td>
<td>0.1</td>
<td>2.7</td>
<td>4.1</td>
<td>3.6</td>
<td>2.8</td>
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<td>AST (U/L)</td>
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<td>1470</td>
<td>2105</td>
<td>1995</td>
<td>1120</td>
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<td>ALT (U/L)</td>
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<td>135</td>
<td>410</td>
<td>875</td>
<td>824</td>
<td>459</td>
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<td>Alk Phos (U/L)</td>
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<td>204</td>
<td>295</td>
<td>374</td>
<td>256</td>
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<td>Urine Vol. (mL/d)</td>
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<td>1375</td>
<td>1000</td>
<td>410</td>
<td>300</td>
<td>215</td>
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</table>

Clinical Course: Several hours later he complained of a headache, became nauseous and vomited. On the 2nd hospital day, he developed jaundice and tender hepatomegaly. His remaining hospital days were characterized by persistent jaundice and increasing respiratory difficulty eventually developing pulmonary edema and expiring on the 8th day after admission. An autopsy was performed.
Figure 1. Liver, H&E stain. x30. At autopsy the liver weighed 1325 gms. The capsule was smooth and the cut surface had a yellow honeycombed trabecular pattern with brown loci of hemorrhage. The biliary system was patent. Several portal areas (p) are labelled.

Figure 2. Liver, H&E stain. x73. Notice the difference in the hepatic parenchyma between the central vein (v) and the portal area (p).

Figure 3. Liver H&E stain. x185. The central vein (cv) is located at the top of the image.

Questions:

1. Describe the injury occurring to the patient’s liver.
2. How do you explain the changes in his renal status?
3. Why are his coagulation studies abnormal?
4. Did the patient’s alcoholism play a role in this illness?
5. What is the most likely diagnosis?