Case Study: Biochemistry Unit

Directions: Make a copy of this document then answer the numbered questions in blue being sure to cite your reliable sources (not Wikipedia or another non-reliable source) in a works cited section (use EasyBib or another app to assist you in creating your works cited). Exact quote must contain quotation marks and reference within your answer. For example: According to Medicaldictionary.com, a diagnosis is a “determination of the nature of a cause of a disease.”

Patient Presentation: A 25-year-old female presents to her primary healthcare clinic complaining of flu-like symptoms which consist of a fever, headache, myalgia, abdominal pain, nausea and fatigue.

History: One week ago, she came to the clinic complaining of weakness, myalgia, headache, nausea and general flu-like symptoms. She also complained of a non-tender lump on her left thigh. She was prescribed acetaminophen and told to return in one week if her symptoms did not improve.

1. What is myalgia?
A:

Examination -Vitals:
Blood Pressure (BP): 119/60
Temp: 37.5°C (99.5 °F)
Respiratory rate: 24
Pulse: 100

Abdominal Examination:
Right upper abdomen is very tender on palpation.
Hepatomegaly is noted

Lower Limb Examination:
Small, soft, mobile, non-tender tumor found on medial aspect of left thigh. This has been identified as a Lipoma

2. Blood pressure readings show two important measurements called systolic and diastolic. What is systole and what is diastole?
A:

3. Is this patient’s systolic reading within a normal range for a health adult? What is the normal systolic value range?
A:

4. What is a lipoma?
A:

5. What organ is most likely causing the tenderness in her right upper abdominal quadrant?
A:
6. What is hepatomegaly?
A:

**Lab Results:**

**Urinalysis Results**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leukocyte Esterase</td>
<td>Trace</td>
</tr>
<tr>
<td>Glucose</td>
<td>Negative</td>
</tr>
<tr>
<td>Protein</td>
<td>Negative</td>
</tr>
<tr>
<td>Ketones</td>
<td>Trace</td>
</tr>
<tr>
<td>Blood</td>
<td>Negative</td>
</tr>
</tbody>
</table>

**Blood Results**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Normal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na⁺</td>
<td>138</td>
<td>(135-147 mmol/L)</td>
</tr>
<tr>
<td>K⁺</td>
<td>4</td>
<td>(3.3-5.0 mmol/L)</td>
</tr>
<tr>
<td>Cl⁻</td>
<td>100</td>
<td>(99-103 umol/L)</td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>14</td>
<td>(18-29 mmol/L)</td>
</tr>
<tr>
<td>Urea</td>
<td>7.2</td>
<td>(2.5-6.4 mmol/L)</td>
</tr>
<tr>
<td>Creatinine</td>
<td>170</td>
<td>(62-115 mmol/L)</td>
</tr>
<tr>
<td>Anion Gap</td>
<td></td>
<td>(10-18 mmol/L)</td>
</tr>
</tbody>
</table>

5. What is an anion? What is an anion gap?
A:

6. To determine the Anion Gap, the following formula is used: \((Na + K) – (Cl + HCO₃)\). Determine the patient’s anion gap and record.
A:

7. List **all** lab results that indicate a trace amount or value outside the normal range. Indicate if the value is trace, high, or low. For example: Leukocyte Esterase – trace
A: Leukocyte Esterase-trace
8. Research each abnormal result from the list you just created. For example: What condition does the patient have or what is the probable source of Leukocyte Esterase is present in the urine? Complete this for each of the abnormal values you listed in question 7.
   Example: Leukocyte Esterase: According to the Mayo Clinic, this is evidence of white blood cells in the urine. This indicates that the patient has in infection, most likely a UTI (urinary tract infection) or kidney infection.
   A:

   Diagnosis:
   Based on your analysis, you have determined that this patient is suffering from metabolic acidosis.

9. What is metabolic acidosis?
   A:

10. Research the main cause for each the following disorders: ketoacidosis, lactic acidosis, renal tubular acidosis, hyperchloremic acidosis, and respiratory acidosis.
    A: Ketoacidosis:

11. What is a chemical buffer?
    A:

12. What is the main buffer found in human blood (be sure you complete your reading assignments)?
    A:

Submit a copy of your completed work on google classroom for grading and print out a copy of this case study for your notes and for studying. You will be asked questions about his case study on tests, quizzes, and during class discussions.

   Works Cited