

Mary Keeper's Aching Head

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Part I—Trouble Sleeping Prompts an Urgent Doctors Appointment

Scenario

This morning at 4 a.m. Mary Keeper woke up with yet another throbbing headache and decided she couldn't stand it anymore—she needed to see a physician. She took some Tylenol[®] and then spent the rest of the morning lying on her couch drinking several glasses of water (10 glasses altogether) until the physician's office opened that morning. She made an urgent appointment to see Dr. Nee.

Patient History

Although Mary is a carrier of the hepatitis B virus, she has been in reasonably good health except for some rheumatoid arthritis in her hip that has developed from a previous sports-related injury. She has been controlling the arthritis using Celebrex[®] and glucosamine for the past two years.

Physical Examination

Vital Signs:

- Age: 41 years old
- Weight: 120 lbs
- Height: 5' 6"
- Temperature: 36.9°C
- Pulse: 90 beats/minute
- Respirations: 16 breaths/minute
- Blood Pressure: 126/75 (systolic/diastolic) mmHg

General Appearance:

- Skin is warm and moist
- Looks fatigued

Head and Neck:

- Lid lag in the right eye
- Bitemporal hemianopsia (blindness in her lateral visual fields)
- Dilation of her left pupil
- Lateral deviation of her left eye

Lungs:

- Normal

Cardiovascular:

- Normal

Abdominal:

- No swelling or pain is present but patient mentions she feels constipated

Genitourinary:

- Not assessed

Extremities:

- A fine hand tremor

Neurological:

- Normal reflexes

Physician Comments:

There is a slight weight loss (10 lbs.) from her last appointment (10 months ago); however, the patient indicates that she has a good appetite and good nutritional habits. She indicates that she has been having re-occurring headaches this past month, which have led to problems sleeping. A blood chemistry, thyroid, and endocrine test are ordered. A follow-up appointment is arranged for the next week to review the blood lab results.

Objectives for Your Group

1. Assign people positions/roles for the case study such as group leader, typist, secretary, and editor.
2. Brainstorm on what you (*a*) know about the case, and (*b*) do not know, but would like to know about the case.
3. Formulate your initial ideas (or hypotheses) about what is wrong with Mary.
4. Identify and define terms and concepts you do not understand.
5. Write an approximately one-page group report that includes (*a*) the roles each person is assigned to, (*b*) your initial hypothesis and the evidence that led to its formulation, and (*c*) the terms and concepts that were initially identified as being unknown to you. Make sure you properly cite the source when explaining a concept.
6. You will be given Part II upon completion of Part I.



Part II—The Follow-up Visit

Scenario

Mary has been on “pins and needles” the past week waiting for her blood results. Finally, Dr. Nee knocked, entered the examination room, and pulled a stool over to Mary. He sat down next to her and opened the manila folder labeled “Keeper, Mary—Blood Results.” On her results were asterisks by her T_3 and T_4 values. Upon looking at those asterisks, Dr. Nee told Mary that she might be suffering from an endocrine dysfunction and that some additional blood work would help with the diagnosis.

Blood Lab Results

Abbreviated Blood Chemistry:

- Total cholesterol: 269 mg/dL
- Osmolality: 280 mOsm/kg/water
- Urea nitrogen: value is within normal limits
- Calcium: value is above the normal limits

Blood Thyroid:

- T_3 -total: value is above the normal limits
- T_4 -free: value is above the normal limits
- T_4 -total: value is above the normal limits
- TBG: value is above the normal limits
- TSH: undetectable

Blood Endocrine:

- ACTH: value is below the normal limits
- Beta-hCG: value is normal for a non-pregnant female
- Prolactin: value is within normal limits

Physician Comments:

Additional hematology tests are ordered and a follow-up appointment is arranged for the following week.

Objectives for Your Group

1. Identify the most important “learning issues” (these are hypotheses, concepts, and ideas) from both Parts I and II that you need to investigate to diagnosis the causes for Mary’s symptoms.
2. Divide up the “learning issues” for each group member to investigate.
3. The group leader will need to turn in a list of your “learning issues” and those group members assigned to each one.

Part II Individual Report

1. Define terms and concepts you don’t understand while investigating your “learning issue.”
2. Thoroughly explain your “learning issue.”
3. Do you have a different hypothesis about the case after investigating your “learning issue”? Provide the reasons or evidence for the change in your thinking, or for why you still consider your initial hypothesis to be the most valid one.
4. Cite all the sources you used. Make sure that you include in-text citations as well as a bibliography at the end of your report.



Part III—Help Dr. Nee Explain His Diagnosis

Scenario

Dr. Nee knocked on the examination room door and entered. Immediately, he told Mary that the additional blood work helped immensely with his diagnosis.

Blood Lab Results

- PTH: value is above the normal limits
- LH: value is above the normal limits
- Estrogen: value is above the normal limits
- FSH: value is above the normal limits
- GH: value is below the normal limits

Upon completion of Part II each member of your group is now the “expert” for a particular learning issue that is involved with Mary’s condition. Hopefully, this research has either reaffirmed your hypothesis about Mary’s condition or enabled you to formulate a new hypothesis. If you are unsure whether you are “on the right track,” please check with the instructor. Your next task is to prepare a group report that addresses the points detailed below.

Objectives and Issues to Address in Preparing Your Final Group Report

1. What is Mary Keeper suffering from? (Hint: it may be more than one dysfunction.) In addition, what symptoms did Mary demonstrate that led your group to their diagnostic conclusion(s)?
2. What additional diagnostic test(s) and/or results will help you confirm your diagnosis and why?
3. In detail, explain why certain blood lab results are high while others are low.
4. Based upon your diagnosis, is her dysfunction(s) associated with a primary or secondary endocrine pathology? Explain your reasoning and thought process associated with your answer(s).
5. Explain the rationale behind her headaches.
6. Explain her vision complications.
7. In general, what is the importance of an individual’s blood osmolality? Hypothesize how Mary’s blood osmolality might change if she exhibited polydipsia.
8. Explain the treatment options for Mary’s dysfunction(s).

Part III Final Group Report

1. Give a *complete and detailed* physiological and/or anatomical reasoning behind your answers to the objectives above.
2. In addressing the questions and issues above, you may indicate the question number and then give your explanation in narrative form, flowcharts, and/or diagrams. You must explain all flowcharts and diagrams used in your report.
3. Limit your report to five to six pages, excluding references.
4. Cite all sources. This includes both in-text citations and a bibliography list at the end of your report.

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