

CASE TEACHING NOTES for “A Case of Diabetes Insipidus”

by

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INTRODUCTION

Antidiuretic hormone (ADH) is produced by cells in the hypothalamus of the brain and stored and released from the posterior pituitary gland in response to rising plasma osmolarity (dehydration). Upon release, ADH travels to the kidneys, where it increases the permeability of cells lining the distal portion of the nephron, thus increasing the reabsorption of water into the circulation and reducing plasma osmolarity back toward normal. Diabetes insipidus is a condition in which ADH is unavailable to regulate plasma water volume, and therefore osmolarity. The disease results in increased frequency of urination due to an inability to produce a concentrated urine.

Before attempting to answer the questions associated with the case, students should review the anatomic and functional relationship between the hypothalamus and the posterior pituitary gland, as well as the basic mechanism by which body water balance is maintained.

Objectives

Upon completion of the case study, students will have learned:

- the similarities and dissimilarities between diabetes insipidus and diabetes mellitus;
- the basic differences between the four types of diabetes insipidus;
- definitions of excessive thirst and urination in adults;
- the methods by which diabetes insipidus is diagnosed and treated;
- other conditions which produce symptoms similar to those produced by diabetes insipidus; and
- physiological effects of ADH other than the maintenance of body water balance.

This case study has been used in a sophomore-level course in human anatomy and physiology, as well as in senior-level course in general physiology.

CLASSROOM MANAGEMENT

Students are given a printed copy of the case at least one week prior to the class in which the case will be discussed. They are told which concepts to review before attempting to answer the questions and that reference books are available in the college library for their use. I ask the students to do their best to complete the questions before the class discussion of the case and encourage them to collaborate with one another. Students are not required to turn in written answers to the questions, but, rather, are called upon at random to answer the questions during the class discussion. Questions from the case study are included on regularly scheduled course examinations. I tell students at the beginning of the term that the more effort

they put into preparing each case, the more they will learn, the more fun they will have, and the better they will perform on the exams.

Answer Key

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to **the key**. You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our **password policy** and then apply online or write to **answerkey@sciencecases.org**.

REFERENCES

Print

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Internet

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What Is Diabetes Insipidus? The Diabetes Insipidus Foundation
<http://www.diabetesinsipidus.org/whatisdi.htm>

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<http://www.kidney.niddk.nih.gov/kudiseases/pubs/insipidus/index.htm>

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