

CASE TEACHING NOTES for “A Case of Cerebrovascular Accident”

by

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INTRODUCTION

Syncope is defined as “sudden and temporary loss of consciousness.” There are numerous causes of syncope. When dysfunction of the autonomic control of the heart is involved the condition is known as neurocardiogenic syncope (NCS).

To prepare for this case study, students should have knowledge of the basic principles of cardiodynamics, regulation of systemic blood pressure, and autonomic control of the heart.

Objectives

After answering and discussing the questions at the end of this case study, students will have learned the following:

- how the terms *end systolic volume*, *end diastolic volume*, *stroke volume*, *cardiac output*, and *total peripheral resistance* relate to systemic arterial blood pressure.
- how the *Frank-Starling law of the heart* relates to cardiac output, and the mechanism by which the *baroreceptor reflex* acts to maintain systemic arterial blood pressure.
- the autonomic neurotransmitters and the receptors to which they bind in the heart.
- the definition of the term *dysautonomia*.
- the mechanism by which NCS occurs, the symptoms it produces, and the manner in which the condition is treated.

This case has been used in both a sophomore-level course in human anatomy and physiology and a senior-level course in general physiology.

CLASSROOM MANAGEMENT

Students are provided with 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 reference materials are placed on reserve in the college library for their use. I ask the students to do their best to answer the questions beforehand and encourage them to collaborate with one another. Students are not required to hand in written answers to the questions, but, rather, are called upon at random to answer the questions during the class discussion. These same questions appear again later 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 examinations.

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

Guyton, A.C., and J.E. Hall. 2000. *Textbook of Medical Physiology* (10th Ed). Philadelphia: W.B. Saunders Co.
Martini, F.H. 2005. *Fundamentals of Anatomy & Physiology*. (7th Ed). San Francisco: Benjamin Cummings.

Internet

Dysautonomia Information Network

<http://potsplace.com>

Neurocardiogenic Syncope

<http://www.potsplace.com/NCS/ncs.htm>

Pathophysiology and Management of Neurocardiogenic Syncope

<http://cme-online.med.upenn.edu/html/files/8/12014/28949/Neuroc>

The Elusive Pathophysiology of Neurally Mediated Syncope

<http://circ.ahajournals.org/cgi/content/full/102/23/2898>

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