

CASE TEACHING NOTES for "Football Fanaticism: An Integrated Physiology Case Study"

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INTRODUCTION

Spinal cord injuries may interrupt pathways carrying motor information from the brain to the spinal motor nuclei or pathways carrying sensory information to the brain. Because motor information crosses in the medulla oblongata, while sensory information crosses at the level of the spinal cord, individuals with a spinal cord injury usually present with ipsilateral motor loss and/or contralateral sensory loss. Generally, injuries to the spinal cord will also result in changes with the cardiovascular and/or respiratory systems.

The case was designed for students in the first semester of the third year of a six-year doctor of pharmacy program. It is currently used to help students understand CNS architecture, major motor/sensory tracts within the CNS, signs/symptoms of both motor and sensory tract lesions, treatment for spinal cord injuries, and possible consequences of treatment. It is also a good illustration of the integration of multiple organ systems whenever a major injury occurs. This case study would work for any course in which students already have a basic knowledge of integrative physiology and have been exposed to the immune system, the nervous system, and the cardiovascular system. It would be appropriate for an undergraduate neuroscience course, for example. Although I have not tried it, a colleague has suggested this case study as a way to relate cardiovascular and respiratory function to one another.

Objectives

Upon successful completion of this case, the student will be able to:

- Describe the major tracts within the CNS that carry either sensory or motor information (including the type of information, origin and destination).
- Describe some of the basic clinical signs/symptoms associated with interruption of these spinal tracts.
- Understand basic vital signs taken by clinicians (HR, BP, etc.) and how they may be relevant to assessing a patient's status.
- Explain the basics of treating a patient with a spinal cord injury.
- Understand that most treatments have undesirable side effects and explain how those side effects may be treated.

CLASSROOM MANAGEMENT

As it is designed, groups of three to four students would be given one week to do the case (outside of the classroom) and one class session would be used to discuss the case, first comparing answers within groups and then having the groups present their answers to one another. The instructor chooses groups

ahead of time. Resources to be used are (1) medical physiology texts, (2) pathophysiology texts, (3) physiology texts, and (4) the Internet. During the class period when the case is discussed, written answers are submitted prior to any discussion. The class then discusses the case with the professor acting as moderator/resident expert. The written responses are screened for plagiarism utilizing Google.

ANSWER KEY

Since the case is geared to pharmacy students, the questions deal with the disease mechanisms, symptoms, and treatment options. These questions can easily be modified for non-pharmacy students or a whole new set of questions may be generated.

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**.

REFERENCES

Print

- Cotran, R.S., V. Kumar, T. Collins, and S.L. Robbins, 1999. *Pathologic Basis of Disease* (6th ed). Philadelphia: W.B. Saunders Co.
- Guyton, A.C., and J.E. Hall. 1996. *Textbook of Medical Physiology* (9th ed). Philadelphia: W.B. Saunders Co.

Internet

- Spinal cord trauma—MEDLINEplus Health Information
<http://www.nlm.nih.gov/medlineplus/ency/article/001066.htm>
- Spinal Cord Trauma—1upHealth.com
http://www.1uphealth.com/health/spinal_cord_trauma_diagnosis_tests.html
- Spinal Cord Injury: Neurological Assessment and Protocols for Intervention
<http://www.montanabrain.com/pages/spinal.htm>
- Drug Index—MedicineOnline.com
<http://www.medicineonline.com/Default.asp?RefID=5&Main=1>
- Online Medical Dictionary
<http://cancerweb.ncl.ac.uk/omd/>

Acknowledgements: This case was developed with support from The Pew Charitable Trusts.

Date Posted: 07/22/03 nas

Originally published at http://www.sciencecases.org/spinal/spinal_notes.asp

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