



NeuroLogic Exam: An Anatomical Approach to the Neurological Exam Using Video and English or Spanish Audio and Caption Tracks

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ABSTRACT

A video resource for the Web combining basic science (anatomy) and clinical diagnostic skills (neurology) was developed. The site is designed as a bridge to the clinical sciences while studying basic science as well as a review of basic neuroanatomy for students on clinical rotations. The emphasis is on learning to examine, in a logical way, so that by the end of the exam the problem can be localized. Each of the six modules has an anatomy review, followed by video of a normal patient. These same components are then illustrated with videos of patients with abnormal findings. There is self-assessment for each module. Unknown cases are being developed for students to practice skills taught in the program. The final feature is a resource section. In addition to material from two U.S. institutions, we have video from the Stern Foundation in Buenos Aires as a proof of concept. We welcome colleagues willing to submit documented video material for review as potential contributions to this resource. All material in the program can be downloaded for local use, or incorporation into new educational material, as long as it is for non-profit educational use and credit is given to the source of the contributed material.

The video clips (250) are a maximum of two minutes. They are NOT designed for use on a modem but on a fast Ethernet connection. Individual movies can be incorporated into lectures or examinations. The program can be used with any browser with the QuickTime plug-in. Using an interactive sprite feature of QuickTime, the movies appear in a frame that allows the user to turn audio on or off. There are two audio tracks. One track is for the conversation between the doctor and patient in English and the other, a Spanish track. Text containing a translation of patient or doctor audio can be placed under the video frame as it plays. This permits the video clips to be adapted to teaching situations in Spanish or English.

This project was supported by the Slice of Life Development Fund at the University of Utah, the Department of Pediatrics, and the Office of Education at the University of Nebraska Medical Center, Omaha, Nebraska. Patients and colleagues at these institutions contributed material along with the Stern Foundation in Buenos Aires.

The Home Page directs the user to the 6 MODULES that comprise the neurological examination. Each module is presented in the same sequence and format. The English version is complete. The section on COORDINATION has been completed in both Spanish and English as a prototype of concept and evaluation.

Coordination Exam (sample screen shots from each section are provided)

Media Resources

Video resources can be accessed independently of the didactic portion of the program. This enables students or faculty to easily compare the normal with the abnormal for each portion of the neurological examination.

QUIZ

Quizzes for each section are planned but not completed, except for the Coordination Module. Quizzes are generated using a free tool developed as part of a grant from the National Library of Medicine to the Knowledge Weavers in the Spencer S. Eccles Health Sciences Library at the University of Utah in collaboration with Donald K. Blumenthal, Ph.D. of the University of Utah College of Pharmacy.

WebQuizBuilder is designed for instructors who want to create interactive Web-based multiple-choice quizzes without coding in HTML or Javascript.

WebQuizBuilder consists of a stand-alone FileMakerPro database interface and a program (written in Perl) that generates a Web-readable multiple choice quiz.

WebQuizBuilder can incorporate images, video, or sound with questions. It also can provide feedback and do scoring. This tool is open source and freely available educational use. It can be downloaded at http://medstat.med.utah.edu/kw/quizmaker_fmp/



AUDIO AND CAPTION TRACKS
Each movie has two sound tracks and two caption languages. It is theoretically possible to turn them all on and hear nonsense! The captions provide assistance when audio is low or permit language training with subtitles in the same or different language. It is hoped that this will provide a way for students to learn medical Spanish as well as being useful to the many Spanish-speaking students in the world.

NeuroLogic CASES

Neurological Cases

Case No. 01: The Upset Office Manager

Case History

The patient is a 48-year-old woman who was in her usual state of good health when she experienced nausea and vomiting after being emotionally upset. After 3 hours of nausea and vomiting she had the sudden onset of numbness of her left arm which progressed to include her left leg and the left side of her face.

She was taken to the Emergency Room. Upon arrival she complained that she had double vision especially when she looked to the right. When she covered her right eye, the most peripheral image (the ghost image) would disappear. She also noticed that when she looked in the mirror the right side of her face didn't move.

Over the next 2 months, the double vision resolved, but the rest of her complaints have persisted.

Neurological Examination

Select the parts of the neurological examination that you need to see for localization of the patient's lesion. When finished, proceed to the next step, which is to "Select from the Checklist of Findings."

Mental Status Exam, Cranial Nerve Exam, Coordination Exam, Sensory Exam, Motor Exam, Gait Exam

Question 1 of 13

This 68-year-old male patient has a 12-year history of hypertension. He has been on medication for hypertension for the past 10 years. He has been on medication for hypertension for the past 10 years. He has been on medication for hypertension for the past 10 years.

Question 5 of 13

After viewing the two-part video clip, answer the question that best describes the anatomical localization for the cause of the patient's ataxia.

A. Midline, vermis and cerebellum
B. Midline, fusiform gyrus and cerebellum
C. Cerebellar hemispheres
D. Midline and cerebellar hemispheres

Wrong
There is extremely ataxia as well as gait ataxia.

TECHNICAL INFORMATION

- Movie Clips:**
- 15 MB Movie files: vary in size from 200K-1000K
 - 10 minutes Movie clip length: 10 seconds to 2 minutes
 - screen size for presentation
 - DVD-ROM (Functional only on the site or a downloaded movie retain their audio and captions)

How were the audio and captions added to the videos?

LiveStage Professional, an application from Totally Hip Software, Inc., was used to create interactive buttons ("sprites") on top of the graphic frame (created in Adobe PhotoShop). LiveStage was also used to program the actions for these buttons. The "sprites" and graphic layers were exported from LiveStage Professional as a QuickTime movie. Using QuickTime Pro, the graphics, sprites, video, audio, and caption tracks were then combined into a single QuickTime movie ready for delivery.

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- INTENDED AUDIENCE**
- Medical Students Learning Neuroanatomy
 - Medical Students Learning Physical Diagnosis
 - Medical Students Learning Neurology
 - Students during Clerkship in Neurology
 - Interns and Residents in Internal

- POTENTIAL USES IN CURRICULUM**
- Classroom Lecture
 - Problem-based case
 - Practical Examinations
 - Clinical Correlations for Basic Science
 - Objective Structured Clinical Exam - OSCE
 - Language Training