HEARING & BALANCE

Date: January 28, 2016

Resources:
Abbreviated and focused recording from – Hearing & Balance PPT – Gruener
Complete – Hearing & Balance PPT – Gruener
UBC Learning Module on Cranial nerves Overview and Brainstem nuclei
http://www.neuroanatomy.ca/module_list.html (Don’t use IE and you need the adobe flash plugin)
TeachSheet on the Eye Movements and vestibular system
Essential Neuroscience, 3rd edition by Siegel & Sapru: Chapter 17

KEY CONCEPTS & LEARNING OBJECTIVES (What you need to demonstrate to pass the test!)

I. Demonstrate the ability to:
   a.) Identify and where appropriate describe (dys)function: Hair cells, otolithic (otoconial organs), semicircular canals, conductive and sensorineural hearing loss
   b.) Diagram the Auditory pathways within the CNS
   c.) Diagram the Vestibular pathways within the CNS (primary afferent projections to and from the vestibular nuclei, vestibulospinal pathways and cerebellar input)

II. Clinically relevant aspects that you need to be familiar with:
   a.) Describe some causes of dizziness and define nystagmus
   b.) Describe the vestibulococular reflex

III. As the course progresses you need to demonstrate the integration of anatomical and clinical knowledge by:
   a.) Suggest a site of dysfunction that would explain signs and symptoms for a clinical case presentation
   b.) Based on a clinical presentation identify the (expected) site of abnormality on an MRI (or CT) scan of the brain
   c.) Develop 2-3 potential diagnoses, appropriate to the patients’ clinical scenario, course and medical history, which would explain the etiology of their difficulty.

Additional References for those who are really (we mean really) interested!

Biller J. Practical Neurology. 4th Ed., Lippincott Williams & Wilkins 2012

Carey J, Amin N. Evolutionary changes in the cochlea and labyrinth: Solving the problem of sound transmission to the balance organs of the inner ear. Anat Rec Part A 2006;288A:482-490


Fettiplace R, Kim KX. The physiology of mechanoelectrical transduction channels in hearing. Physiol Rev 2014;94:951–986

Hudsphet AJ. Integrating the active process of hair cells with cochlear function. Nat Rev Neurosci 2014;15:600-614


Sohmer H. Reflections on the role of a traveling wave along the basilar membrane in view of clinical and experimental findings. Eur Arch Otorhinolaryngol 2015;272:531–535
