Teaching Rounds - Encephalopathies, Stupor, Coma, Delirium and Dementia – U of Connecticut

Session 2-Encephalopathies, Stupor, Coma, Delirium and Dementia

1. A 29-year-old woman with a history of anxiety and schizoaffective disorder is brought into the emergency room after being “found down” on the street. Upon reaching her bedside, you note that her eyes are half-open and that her mouth is slightly open. She is not responsive to verbal or noxious stimuli. When she arrives, she is afebrile with a BP of 110/70, pulse of 76 and RR 16. Her pupils are 4 mm and reactive bilaterally. When you force her eyes open, her globes roll upward and outward. The corneal blink reflexes are equal bilaterally. Oculocephalic responses are inhibited bilaterally. There is no pharyngeal (gag) reflex on either side. She does not withdraw to noxious stimuli applied to any limb. Her reflexes are 2+ throughout with bilateral flexor plantar responses. Cold water irrigation in her right ear results in slow conjugate eye deviation to the right with a rapid correction to the left. When warm water irrigation is applied to the left ear, there is slow conjugate deviation to the right followed by a rapid correction to the left. [Diagnosis: Psychogenic Coma]

   a. Discuss Bell’s phenomenon and its diagnostic importance
   b. Discuss why the absence of the pharyngeal reflex is non-diagnostic
   c. Discuss the oculocephalic (“Doll’s eyes”) reflex
   d. Discuss the findings noted with ear canal “caloric testing”
   e. Discuss the pathophysiology of “psychogenic coma”
   f. Discuss how an EEG might be useful in this situation.

2. You are asked to consult on a 44-year-old HIV positive man who was recently diagnosed with AIDS. You are asked to see him because he had an abrupt change in mental status overnight. He was alert and oriented the previous evening but was found to be lethargic and minimally responsive this morning. He is arousable but stuporous. His oral temperature is 39 degrees Celsius, BP 140/90, HR 110 and RR 22. His general physical examination is unremarkable. Kernig’s and Brudzinski’s signs are both negative. There are scattered coarse rhonchi in all lung fields. His cranial nerve examination is remarkable for roving conjugate eye movements bilaterally. He withdraws to noxious stimuli in all four limbs. Reflexes are 2+ throughout with bilateral flexor plantar responses. A head CT with and without contrast is unremarkable. [Diagnosis: Cryptococcal meningitis]

   a. Discuss the significance of bilateral roving conjugate eye movements
   b. Discuss why brain imaging was negative in this case
   c. Discuss the differences between primary and secondary encephalopathies
   d. Discuss the differential diagnosis
e. Discuss what additional diagnostic tests are indicated
f. Discuss why meningeal signs are absent in this case
g. Discuss the role of lumbar puncture in any suspected case of meningitis

3. You are working in an emergency room when the triage nurse asks you to see someone immediately. You are introduced to a 64-year-old woman with a past medical history significant for hypertension, diabetes and hypercholesterolemia who was brought in by her husband because she had been “speaking gibberish” for the past 2 hours. She is stuporous but arousable. Her oral temperature is 39 Celsius. Her BP is 110/70, pulse of 90, and RR 19. Her general physical examination is unremarkable. Her neurological examination is remarkable for a Broca’s aphasia. She resists examination but is able to move all four limbs. She withdraws to noxious stimuli in all four limbs. Her reflexes are 2+ throughout with bilateral flexor plantar responses. Head CT without contrast demonstrates no radiographic abnormalities. Her ECG demonstrates a normal sinus rhythm at 90 bpm. Her CBC and CMP (comprehensive metabolic profile) and coagulation studies are all unremarkable. Your nurse says that he has prepared tissue plasminogen activator [TPA] and asks if he may infuse it. At that moment, the patient begins to smack her lips, pick at her blouse with her left hand and stiffen her right upper extremity. [Diagnosis: Herpes simplex encephalitis]

a. Discuss why TPA should not be administered in this situation
b. Discuss the differential diagnosis
c. Discuss the diagnosis if an MRI demonstrates an increased T2 signal in the left orbitofrontal and temporal lobes
d. Discuss the diagnostic significance of PLEDs on an EEG
e. Discuss the treatment of this condition
f. Discuss the patient’s prognosis in relation to time the treatment is initiated
4. You are called to the emergency room to evaluate a 21-year-old woman who is lethargic and minimally responsive. The emergency room physician reported that the patient was brought in by her roommate because she was “feeling lightheaded and dizzy.” The emergency room physician ordered a finger stick glucose that returned at 46. The emergency room physician then administered one ampoule of dextrose in water (D50). The patient became less responsive and is now in a coma. Her roommate denies any known past medical history. The roommate states that the patient never used alcohol, tobacco or illicit drugs to her knowledge. On examination, you note a thin cachectic woman who is in a coma. She is 5ft4 and weighs 40 kg (88 lbs.). Her pupils are 4mm in diameter and reactive to light with a normal consensual response. The oculocephalic reflex is present bilaterally but the conjugate eye movements are slow, prolonged and the eyes do not fully abduct. Cold caloric testing demonstrates a very slow drift to the irrigated ear with incomplete abduction and a delayed fast component. The corneal blink and pharyngeal reflexes are present bilaterally. She withdraws to noxious stimuli in all four limbs. Reflexes are 1+ throughout except for absent ankle reflexes. The plantar responses are minimally flexor bilaterally. **[Diagnosis: Wernicke’s encephalopathy]**

a. Discuss the lesion localization based on her examination
b. Discuss the likely emergency diagnosis in this case
c. Discuss the emergency treatment
d. Discuss the reason why she abruptly worsened with glucose
e. Discuss how this could have been avoided
f. Discuss why she developed this condition in the absence of alcohol use
g. Discuss her prognosis including possible sequellae

5. As you are preparing to leave the emergency room, EMS personnel rush in with a 32-year-old man on a stretcher. They relate that he and his co-worker were engaged in horseplay when a nail gun discharged and drove a nail through the patient’s right fronto-temporal region just behind the right orbit. The patient reflexively pulled the nail out and applied pressure to the area. However, he became rapidly less oriented and more lethargic. His co-worker called EMS on his cellular telephone. It has been 15 minutes since the initial injury. The patient is comatose. He is afebrile with a BP of 190/50, HR of 50 and irregular respirations of 9 breaths per minute. His right pupil is 8 mm and his left pupil is 4 mm. The left pupil reacts consensually whereas the right pupil does not. He withdraws the right side of his body to painful stimuli but merely grimaces with left-sided noxious stimulation. **[Diagnosis: Herniation secondary to hemorrhage]**

a. Discuss the lesion localization based on his examination
b. Discuss the pupil findings
c. Discuss “Cushing’s response”
d. Discuss the likely emergency diagnosis in this case
e. Discuss the initial emergency treatment
f. Discuss the definitive treatment  
g. Discuss the reason why the nail should not have been removed  
h. Discuss why the patient might awaken with cortical blindness

6. You are consulted on a 34-year-old woman who is on the liver transplant list because of chronic active hepatitis from HCV infection. She was lethargic but arousable on morning rounds but has become progressively less responsive during the day. A review of her chart noted that she had been given lorazepam for agitation the previous evening. The internal medicine service administered flumazenil to no apparent effect. A head CT was obtained that demonstrated no acute changes from an identical study obtained 2 months earlier. An EEG was obtained which demonstrated a 5-6 hertz background rhythm with superimposed triphasic waves. On arrival to the bedside, she is afebrile with a BP of 100/76, pulse 76 and RR 18. She is jaundiced. As you open her eyes, you note scleral icterus and a musky odor when she exhales. Her general physical examination reveals an enlarged abdomen due to ascites. Her neurological examination reveals a stuporous but arousable woman. When asked to hold out her hands, she manifests an alternating flapping movement at her wrists and metacarpophalangeal joints. She withdraws to noxious stimuli in all four limbs. Her reflexes are diffusely brisk with equivocal plantar responses. [Diagnosis: Hepatic encephalopathy]

a. Discuss the likely diagnosis based on these signs and symptoms  
b. Discuss the neurological complications of HCV  
c. Discuss what laboratory abnormalities might be noted  
d. Discuss the phenomenon of asterixis  
e. Discuss why lorazepam should not have been administered  
f. Discuss the appropriate use of the medication flumazenil  
g. Discuss the EEG findings (e.g. triphasic waves)  
h. Discuss the potential treatment options

7. A 67-year-old woman is referred to your clinic by her primary care physician. She is a retired high-school English teacher with an extensive vocabulary. For the past 3 weeks, she has been having word-finding difficulties even for common objects. Her husband reports that she has experienced difficulty navigating about the house over the past week. Her husband became concerned yesterday when she telephoned him stating that she got lost driving to the grocery store. She was unable to tell him her location so he had to telephone the police who found her several miles from her home. The primary care physician ordered a STAT MRI of the brain that was unremarkable so she is referred to your clinic. On examination, she is alert but not oriented to date, place or time. Her Folstein mini-mental status score is 17/30. Her neurological examination is remarkable for a tremor in all extremities and her trunk that becomes more pronounced when she attempts to walk to the examination table. As you are prepared to examine her, your cell phone rings causing her to have several myoclonic jerks. [Diagnosis: CJD]

a. Discuss the lesion localization based on her signs and symptoms  
b. Discuss why Alzheimer’s disease is an unlikely diagnosis  
c. Discuss the likely diagnosis  
d. Discuss the laboratory tests (e.g. 14-3-3 protein) to confirm the diagnosis
8. A 47-year-old attorney presents to your neurology clinic stating that she wants to be tested for Alzheimer's disease. She reports that she is forgetting people’s names, misplacing files and is having difficulty remembering telephone conversations with her clients. When questioned, she denies any difficulties driving to and from work. None of her colleagues have noticed a change in the quality of her work but she states that “What used to take me an hour now requires two.” She is alert, oriented and dressed in a freshly pressed business suit and skirt combination. Her Folstein mini-mental status examination is 30/30. The remainder of her neurological examination is unremarkable. **[Diagnosis: Depression causing pseudodementia]**

a. Discuss what additional history might be helpful
b. Discuss the differences between dementia and pseudo-dementia
c. Discuss what laboratory tests are indicated
d. Discuss the role of neuropsychiatric testing
e. Discuss the treatment options if the laboratory studies are normal
f. Discuss the patient’s prognosis

9. A 75-year-old retired banking executive is referred to your office by her family practitioner because of cognitive changes and unsteadiness. Her husband reports that she has fallen several times during the night when ambulating to the commode. He also noted that she tends to walk stiffly and has to hold onto him for balance. She denies any headache, visual changes, dysphagia, dysarthria, or sphincter dysfunction. On examination, her Folstein mini-mental status examination is 26/30. Her general physical examination is unremarkable. Her neurological examination is remarkable for absent vibratory sense below T8. She has 4/5 strength in her lower extremities with increased tone. Her reflexes are 3+ in the knees and ankles with bilateral extensor plantar responses. Rectal tone is normal. Her laboratory studies performed by the referring physician demonstrate a normal TSH, normal folate level of 20 and a B12 level of 210 which is barely within the normal range. **[Diagnosis: Pernicious anemia]**

a. Discuss the localization based on the patient’s examination
b. Discuss the most likely diagnosis
c. Discuss additional testing that may be helpful (e.g. methylmalonic acid levels)
d. Discuss why a CBC and a peripheral blood smear might be normal
e. Discuss how she should be treated
f. Discuss her prognosis