Teaching Rounds – Cerebrovascular Disorders - University of Connecticut

Session 1- Cerebrovascular Disorders

1. A 45-year-old man with a past medical history of poorly controlled hypertension is brought into the emergency room by his wife because he describes a sudden onset of a severe right occipital headache followed by incoordination of the right arm and leg. His vital signs are a temperature of 37°C, BP 220/140, HR 110 and RR 22. He is 6ft tall and he weighs 290 pounds. His general physical examination is remarkable only for a rotund abdomen. His neurological examination reveals incoordination on finger to nose and heel to shin testing. He states that he is too unstable to walk so his gait was not tested. What is the likely diagnosis and how would you proceed? [Diagnosis: Cerebellar hemorrhage]

   a. Discuss why the lesion localizes to the right cerebellar hemisphere
   b. Discuss why there is no nystagmus [flocculonodular lobe] or truncal ataxia [vermis and midline cerebellum]
   c. Discuss why the headache suggests a hemorrhage
   d. Discuss hypertension as a risk factor for hemorrhagic stroke
   e. Discuss why a head CT without contrast is the confirmatory test of choice
   f. Discuss why TPA is not indicated
   g. Discuss why the blood pressure is reduced gradually and not abruptly
   h. Discuss why a neurosurgeon should be consulted

2. A 64-year-old woman with a past medical history of hypertension, diabetes mellitus and a remote Q wave inferior wall myocardial infarction presents to your office with a “fluttering feeling” in her chest and a mild left hemiparesis that she noticed upon awakening 2 hours ago. Vitals signs are T 37°C, BP 190/100, HR that is irregularly irregular at 140 and RR 22. She is 5ft 4 inches tall and weighs 50 kg (110 pounds). Her physical examination is remarkable for an irregularly irregular heart rate. Her neurological examination reveals a left supranuclear VIIth nerve weakness. She manifests a left hemiparesis with 4/5 strength and decreased tone. Her reflexes are 2+ on the right and 1+ on the left. Her right plantar response is flexor and her left is equivocal. She exhibits left-sided extinction to double simultaneous stimulation. She circumducts her left foot when walking. What is the likely diagnosis and how would you proceed? [Diagnosis: Right MCA distribution embolic stroke]

   a. Discuss why the lesion localizes to the right MCA distribution
   b. Discuss the importance of the “cortical signs”
   c. Discuss supranuclear and infranuclear facial paralyses.
   d. Discuss why the left side manifests decreased tone and reduced reflexes
   e. Discuss why this stroke was likely embolic
   f. Discuss why the time of onset cannot be firmly established
   g. Discuss why TPA is not indicated
h. Discuss why a head CT without contrast should be performed.
i. Discuss why this patient should receive heparin followed by Coumadin
j. Discuss why she should not be cardioverted for at least one week
k. Discuss the indications for anticoagulation versus antiplatelet therapy

3. A 68-year-old woman with a past medical history of hypertension, hypercholesterolemia and diabetes mellitus is driven to the emergency room by her husband. He stated that 15 minutes ago she began “talking funny” as if she were “drunk,” although she does not drink alcohol. On arrival to the emergency room, her vital signs are a temperature of 37 C, BP 170/90, HR 80 and RR 20. She is 5ft 2 inches tall and weighs 110 pounds. Her general physical examination is unremarkable. Her neurological examination reveals that she has slurred speech but that comprehension, fluency and naming are intact. Her right upper extremity weakness is graded at 4/5 whereas her right lower extremity demonstrates normal tone and 5/5 strength. Her reflexes are 2+ except in the right upper extremity where they are 1+. Plantar responses are flexor bilaterally. She walks without difficulty and has a negative Romberg. Head CT without contrast demonstrates no evidence of hemorrhage, mass or midline shift. Her CBC, CMP and PT/PTT studies are all within normal limits. Her ECG is unremarkable. These data have all been collected within 1 hour of symptom onset. What is the likely diagnosis and how would you proceed? [Diagnosis: Clumsy-hand dysarthria lacunar stroke]

a. Discuss the localization and the four classic “lacunar syndromes”
b. Discuss the pathology of lipohyalinosis versus atherosclerosis
c. Discuss the risk factors for lacunar stroke
d. Discuss the difference between dysarthria and aphasia
e. Discuss the various types of aphasias
f. Discuss the indications and contraindications for TPA
g. Discuss why antiplatelet therapy is in order
h. Discuss the SPARCL study and the role of atorvastatin

4. A 48-year-old man with a past medical history of hypertension and diabetes mellitus is brought in by ambulance because he was “talking funny.” On arrival to the emergency room one hour later, his vital signs are a temperature of 37 C, BP 200/110, HR 80 and RR 20. He is 5ft 10 inches tall and weighs 290 pounds. His general physical examination is remarkable for a left lateral displacement of his PMI. His neurological examination has returned to normal. When questioned, he states that he could “think of the words in his mind” but was unable to express himself. He also reported that he was unable to move his right arm. Head CT without contrast demonstrates no evidence of hemorrhage, mass or midline shift. His CBC, CMP and PT/PTT studies are all within normal limits. His ECG confirms LVH by voltage criteria. What is the likely diagnosis and how would you proceed? [Diagnosis: TIA involving left middle cerebral artery]

a. Discuss the localization
b. Discuss the importance of left ventricular hypertrophy
c. Discuss the definition of a TIA and how they are evaluated
d. Discuss the pathophysiology of atherosclerosis vs. lipohyalinosis
e. Discuss the importance of an angiogram for assessing degree of stenosis
f. Discuss the indications for a carotid endarterectomy [NASCET trial]

5. A 91-year-old woman who is a resident of a nursing home is brought to the emergency room for a “change in mental status.” The nursing home records reveal that she had a remote left MCA distribution stroke with a residual global aphasia and a dense right homonymous hemianopia and a right hemiparesis. On arrival to the emergency room two hours later, her vital signs are a temperature of 39 C, BP 180/90, HR 104 and RR 26. She is 5ft 2 inches tall and weights 100 pounds. Her general physical examination is remarkable for diffuse cachexia. Her neurological examination demonstrates an elderly aphasic woman with a right homonymous hemianopia to threat and a right hemiplegia. The nurse’s aide who accompanied the patient stated that she usually had some movement of her right lower extremity. Head CT without contrast demonstrates no evidence of hemorrhage, mass or midline shift but does reveal a hypodensity in the left MCA distribution. Her CBC demonstrates a WBC count of 15,000 with 90% neutrophils. Her CMP is remarkable only for a low protein. Her PT/PTT studies are all within normal limits. Her urinalysis reveals WBCs “TNTC” with numerous gram negative rods on Gram stain. What is the likely diagnosis and how would you proceed? [Diagnosis: Decompensated stroke]

a. Discuss why this is not a new stroke, (i.e. neurons do not die twice)
b. Discuss that this is neurological decompensation due to infection
c. Discuss why TPA is not indicated
d. Discuss why hydration and antibiotics will result in a return to baseline.
e. Discuss the difference between hemiparesis and hemiplegia
f. Discuss how a field cut to threat can be assessed in an aphasic patient

6. You are called to see a 28-year-old woman on the obstetrical service who developed a severe frontal headache followed by bilateral leg weakness. She had an unremarkable pregnancy but required a C-section for signs of fetal distress one week ago. Her chart notes that she is G4P1A3L1 because of three miscarriages. She stated that her older sister and mother also had several miscarriages as well. On arrival, she is afebrile, BP 150/90, HR 80 and RR 22. Her general physical examination reveals an enlarged abdomen with a transverse scar consistent with her recent delivery by C-section. She is unable to move either lower extremity. Her knee and ankle reflexes are absent and her plantar responses are mute bilaterally. Her neurological examination is otherwise unremarkable. What is the likely diagnosis and how would you proceed? [Diagnosis: Sagittal sinus thrombosis]

a. Discuss the localization to the sagittal sinus
b. Discuss the importance of obtaining the family history
c. Discuss why TPA is not indicated
d. Discuss what laboratory studies should be drawn and why
e. Discuss why heparin is not given until these studies have been drawn
f. Discuss the duration of Coumadin therapy
g. Discuss the range of anticoagulation that is required; [INR of 2-3]
h. Discuss the risks of becoming pregnant on Coumadin

7. A 20-year-old man is brought into your emergency room after having been struck on the left side of his neck with a baseball bat during a street fight. About 30 minutes later, he noted severe left sided neck pain that radiated into his left eye. His examination is remarkable for a mild expressive aphasia. His left eyelid is ptotic; the left pupil is 2 mm and minimally reactive whereas his right pupil is 4 mm and briskly reactive. His examination also reveals mild right upper extremity weakness. His neurological examination is otherwise unremarkable. [Diagnosis: Carotid dissection]

   a. Discuss lesion localization to the left carotid artery
   b. Discuss the phenomenon of Horner’s syndrome
   c. Discuss the pathophysiology of carotid dissection
   d. Discuss how it is diagnosed with an angiogram
   e. Discuss how this condition is treated [Note: A recent publication reported that aspirin is equivalent to Coumadin]